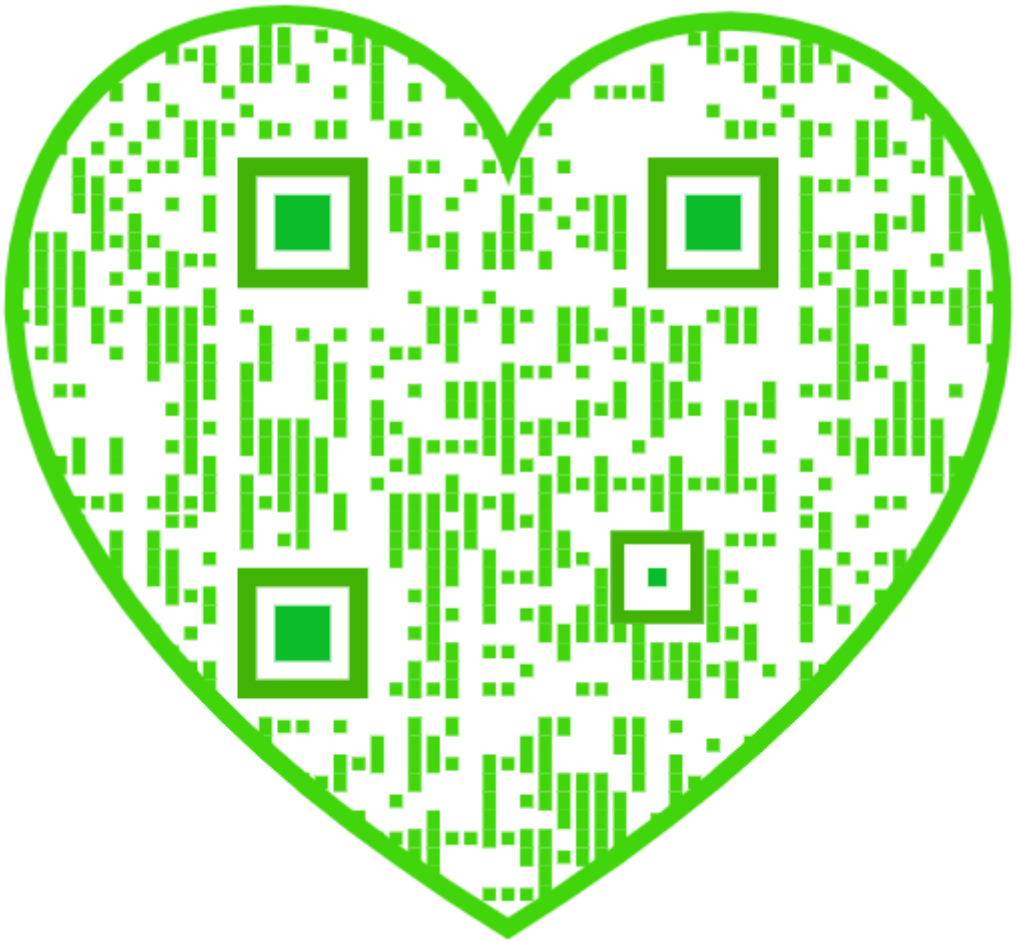
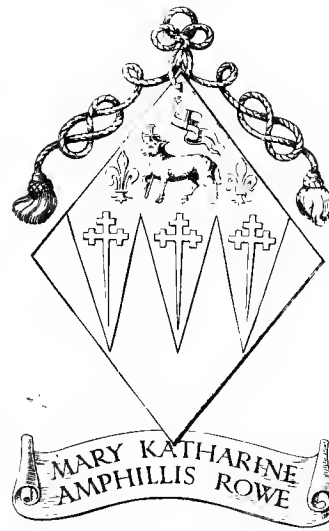
ROOT·AND·STEM VEGETABLES

PRESENT-DAY·GARDENING



SB322
D28



Cornell University Library
SB 322.D28
Root and stem vegetables,
3 1924 003 303 926
mann

The original of this book is in
the Cornell University Library.

There are no known copyright restrictions in
the United States on the use of the text.

http://www.archive.org/details/cu31924003303926

Present-Day Gardening

EDITED BY . . . . .
R. HOOPER PEARSON
MANAGING EDITOR
OF THE *GARDENERS' CHRONICLE*. . . . .

A LIST OF VOLUMES IN THE SERIES IS GIVEN ON THE NEXT PAGE. . . . . .

Present-Day Gardening

List of Volumes in the Series.

1. SWEET PEAS. By HORACE J. WRIGHT, late Secretary and Chairman of the National Sweet Pea Society. With Chapter on "Sweet Peas for Exhibition" by THOS. STEVENSON.

2. PANSIES, VIOLAS, AND VIOLETS. By WILLIAM CUTHBERTSON, J.P., and R. HOOPER PEARSON.

3. ROOT AND STEM VEGETABLES. By ALEXANDER DEAN, V.M.H., Chairman of the National Vegetable Society.

4. DAFFODILS. By the Rev. J. JACOB, Secretary of the Midland Daffodil Society, with Preface by the Rev. W. WILKS, M.A.

5. ORCHIDS. By JAMES O'BRIEN, V.M.H., Secretary of the Orchid Committee of the Royal Horticultural Society.

6. CARNATIONS AND PINKS. By T. H. COOK, Head Gardener to Queen Alexandra at Sandringham; JAMES DOUGLAS, V.M.H.; and J. F. M'LEOD, Head Gardener to Mr. J. Pierpont Morgan.

7. ROSES. By HERBERT E. MOLYNEUX, Member of the Executive Committee of the National Rose Society.

8. RHODODENDRONS AND AZALEAS. (*The first popular volume published on this subject.*) By WILLIAM WATSON, A.L.S., Curator of the Royal Botanic Gardens, Kew.

9. LILIES. By A. GROVE, F.L.S.

These will be followed by volumes on **Annuals, Chrysanthemums, Dahlias, Pæonies, Apples and Pears, Primulas, Cucumbers, Irises, Melons, Hardy Herbaceous Plants, Tomatoes, Bulbous Plants, Peaches and Nectarines, Vines, Rock Plants, Stove and Greenhouse Plants, &c.**

PLATE I.

COLOURED POTATOES.

RED KIDNEY.
(Reading Ruby.)

RED ROUND.
(Reading Russet.)

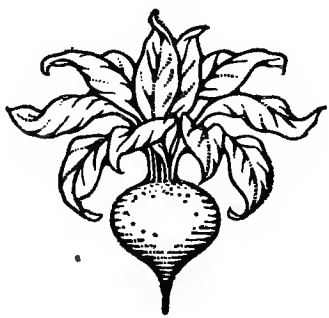
BLUE ROUND.
(The Dean.)

RED AND WHITE TUBER.
(King Edward VII.)

Root and Stem Vegetables

By Alexander Dean

With Eight Coloured Plates



London: T. C. & E. C. Jack
16 Henrietta St., W.C., & Edinburgh

@
SB322
D28

@46903

CONTENTS

CHAP.		PAGE
	INTRODUCTION	1
I.	PREPARATION OF SOIL FOR VEGETABLES	6
II.	VEGETABLES WITH TAPERING ROOTS	18
III.	ROUND ROOTS, BULBS, AND TUBERS	31
IV.	BLANCHED-STEM VEGETABLES	71
V.	MUSHROOM CULTURE	93
VI.	PREPARATION OF VEGETABLES FOR EXHIBITION	98
VII.	CALENDAR OF OPERATIONS	106
	INDEX	113

PREFACE

IF this series failed to treat upon the culture of vegetables it would never justify its title, nor constitute a guide to present-day gardening. It is a sign of the times that the public appreciation for the natural foods of the garden, orchard, and farm is increasing; and whilst the national importance of vegetable culture is not, even now, adequately recognised, at the same time progress is being made in this direction.

The author of the present volume has been intimately connected with vegetable gardening for half a century.

For many years he has lectured on vegetable culture for the Surrey County Council, thus teaching amateurs and cottagers the principles on which successful culture is based. He has founded a National Vegetable Society, and is chairman of that body, whilst his services to the Fruit and Vegetable Committee of the Royal Horticultural Society have extended over some twenty years. For his distinguished services and devotion to kitchen gardening he has been awarded the Victoria Medal of Honour in Horticulture by the Council of the Royal Horticultural Society.

The information contained in the following pages is the narration of personal experience, without, as he states, reference to any published works. If no acknowledgment has to be made to previous authors, however, a debt of

gratitude is due to several cultivators who lent generous assistance in the matter of obtaining specimens for illustration at a late season of the year. These include Messrs. Sutton & Sons; Messrs. Dobbie & Co.; Mr. E. Beckett, Aldenham House Gardens, Hertfordshire; Mr. A. Basill, Woburn Park Gardens, Addlestone; and Mr. J. Bowerman, Hackwood Park Gardens, Basingstoke.

The work is confined to vegetables that yield food in the shape of roots, bulbs, tubers, or blanched stems, but it is proposed to issue a companion volume on the subject of green vegetables; such, for instance, as the numerous members of the Cabbage tribe, the hearting and leaf plants, and the pod-bearing kinds, including Peas and Beans.

THE EDITOR.

LIST OF ILLUSTRATIONS

PLATE

I. COLOURED POTATOES . . . . . *Frontispiece*

PAGE

II. ARTICHOKES, KOHL-RABI, CELERIAC, AND RADISH . 12

III. TYPES OF CARROT 22

IV. PARSNIPS AND BEET 26

V. ONIONS 42

VI. WHITE POTATOES 56

VII. TURNIPS 68

VIII. CELERY AND LEEK 76

ROOT & STEM VEGETABLES

INTRODUCTION

It may be assumed that the urgent necessities of man had a powerful influence in originating the culture of vegetables as food products. Primitive man was dependent for his maintenance on animals, fish, and such vegetable products as fruits and nuts. As he developed greater powers of observation he found that food plants were the better for cultivation in soil tilled to the extent that was possible with the elementary implements at his disposal. In course of time he saw that by planting and sowing in situations close at home, where the crops could be protected from wild animals, a supply of vegetables could be obtained with far greater ease than when left to grow wild. Considering the rough character of cultural implements in comparatively recent times, it is scarcely possible to imagine what those used by primitive man could be like. But crude or otherwise, a beginning had to be made, and the results may have been as satisfying to those early cultivators as the best obtainable to-day are to us. It seems natural to suppose that in some such way the cultivation of vegetables as human food was commenced.

Ancient history now and then contains references to the culture of garden products. Pliny, who lived in the first

century, made frequent references to vegetables; indeed, gardening in some form or other seems to have existed through the ages, and its growth, therefore, may be assumed to have been gradual. The monks were great gardeners, and many of the ancient abbeys and monasteries still bear evidence of the gardening which was practised about them. The monks led secluded lives, but they had the greatest relish for good food, and such vegetables and fruits as existed at the time were cultivated most assiduously and with great success. It is impossible to say how much we may owe to those ancient Fathers, but we do know, as gardeners, that there has been handed down to the present generation a wonderful variety of wholesome food products, constituting a wealth which still increases and seems likely to increase. However, we owe most to the cultivators of the nineteenth century. At the commencement of that century the kinds of vegetables were nearly as numerous as now, but the varieties grown were few and they lacked the high merits of present-day vegetables. Continuously during the century, but especially after the middle, new varieties of greater excellence were brought into existence. Still there are new sorts every year that with superior culture excel all previous forms, and this will be the case as long as gardening is practised. We cannot stand still; if we do not progress we shall retrogress. That condition must never arise. Vegetables are the best and purest forms of food, therefore economic necessities will always ensure their cultivation.

Kinds of Vegetables.—If all garden vegetables were of one nature or kind, they would yield but a very limited range of food; but happily, the variation of character

found in them is remarkable, and whilst in no one case do we consume all the parts of the same plant, yet in one plant or another every part is found agreeable as food. One important section furnishes roots or tubers. These are the products of the summer season, but they are easily preserved in a fresh and sweet condition for use in winter. Some roots are long and tapering; others, which mature on the surface of the soil, are round. Beets, Carrots, and Parsnips are instances of the former section, and Onions, Turnips, Celeriac, and Globe Beets represent the latter type. The tuberous-rooted section includes the Potato and Jerusalem Artichoke. These, whilst ordinarily classed as roots, are not roots in the same sense as those already named. A tuber is an underground stem, and it contains much more starch than is found in any of the true roots. The starch is stored by Nature to feed the "eye" buds, when, under the influence of warmth and moisture, they push into growth to form separate plants. It is mainly the accumulation of starch granules in these tubers which makes them so valuable for food, and superior to all other crops that mature in the soil. Potato crops may vary, according to the season, in extent and quality, but nothing is likely to usurp the predominant position of this tuber among edible vegetables.

Widely different from tubers and roots are those vegetables that furnish edible flowers, pods, or fruits. In cases such as Peas and Broad or Long Pod Beans, it is the unripe seeds that form a delicious diet, but when we utilise Scarlet Runner, or Dwarf French Beans, then it is the immature pods which we employ. Very distinct foods are obtained in the pulpy, succulent fruits of Tomatoes,

Cucumbers, Vegetable Marrows, and Aubergines; which, though containing much water, yet in the summer season are deliciously cool and enjoyable to the palate.

The hardiest section of vegetables are to be found in the leaf or hearting, or white-head producing Brassicas.

The Cabbage family is a very large one, and its members possess remarkable quality and excellence. White and Red Cabbages, Savoys and Coleworts, form solid "hearts" or "heads," but they are truly leaf plants, the hearts being composed entirely of leaves. Borecoles or Kales also consist of leaves, but their heads are of loose rather than solid formation. Brussels Sprouts are small stem-sprouts, and Cauliflowers and Broccolis furnish heads of unexpanded flowers which form soft, sweet, delicious food. Strange as it may seem, all these diverse leaf-yielding and flower-yielding plants have apparently developed from one species only. What an abundance of splendid food vegetables we thus derive from the labours of former cultivators, who, by various forms of cultivation, have developed them from wild plants that now so little resemble the improved garden forms!

There still remains a section which furnishes food in the form of stems. But to make these stems edible it is needful to adopt certain artificial measures, to cause them to become soft, tender, and juicy. Left to Nature alone, Seakale, Celery, Leeks, Asparagus, Chicory, and a few other kinds, would be too hard or astringent, they would lack flavour; but when the stems are blanched by excluding light from them, they become tender and agreeable in flavour.

In addition to the vegetables already mentioned, efforts

are made from time to time to introduce into cultivation forms that are unfamiliar to the public. Green corn cobs, such as are popular in America, can be grown in this country successfully, provided the plants are raised under glass in spring and planted out in May. The tubers of the brilliantly flowered climber *Tropæolum tuberosum* possess flavour which some people appreciate greatly. *Stachys tuberifera* is referred to in the following pages, but attention is drawn to it here because the small white tubers are exceedingly delicious when properly cooked. Yet this vegetable is almost unknown in general households, although small quantities can often be purchased in Covent Garden Market.

CHAPTER I

PREPARATION OF SOIL FOR VEGETABLES

Soils differ greatly in their texture and degree of fertility. Some are shallow and rest on a gravel or chalk base; others consist of a mere bed of sand of varying depth, or a stiff loam on a deep bed of clay. The best of all soils is a deep alluvial loam, but this type is too seldom available for kitchen garden sites. Experience goes to prove, however, that no matter what the nature of the soil, the best results can only be obtained by deep culture. Even when the subsoils are of chalk, stone or ash, clay or sand, all presenting features of the most unfavourable nature, they must nevertheless be worked beneath the customary well aerated and stirred surface soil of some 6 inches to 12 inches in depth. This culture of the subsoil may be done gradually by bringing to the surface just a few inches each year, for the purpose of exposing it to atmospheric influences and the benefit of manuring; thus it will get incorporated with the surface soil, and eventually be equally productive.

There are few great gardens in which the soil and subsoil were deeply worked at the start. The great depth of well-tilled soil now to be found in most of them has been the work of many years, the deepening process going on gradually until ground which at one time had but 12 inches of friable soil has now double or even treble that depth; for

it is common practice in high-class vegetable gardens to trench ground to a depth of 3 feet.

In setting out to deeply work an area of ground not hitherto subjected to this treatment, the simple plan of what is known as half, or bastard trenching is most suitable. That operation is as follows. The plot to be trenched has shallow drills drawn across it at 24 inches apart, using a garden line, and a hoe or spade to mark the drills. Commencing at one end, the upper soil, the width of the portion to be trenched 2 feet wide, is thrown out to a depth of 12 inches, and the soil is put on the adjoining ground or footpath, the loose soil being shovelled out clean. Then the hard bottom is broken up with a stout fork to such depth as is convenient, and the soil is well pulverised, so that water and air may pass freely into it. If a dressing of short, half-decayed animal manure can be strewn over the newly broken soil, much will be done towards making it fertile, and the roots of surface crops, being attracted into it, their action will further tend to bring this hitherto barren soil into a condition of fertility. On to that manure the top spit of the next 2 feet wide trench is cast, and the bottom of that trench is treated and manured as in the case of the previous one. The effect of this bastard trenching on crops in the following season is remarkable, and each year the crops continue to show improvement.

After the lapse of a few years, the operation known as perfect trenching may be carried out. In this case, not only is the top spit of the first trench of 2 feet wide thrown out, but the second spit from that trench also, the hard bottom left being then broken up and well pulverised with a fork, and a dressing of manure added. On to that

loosened soil the top spit from the next trench is thrown, and on to that the second spit or layer of soil, which now becomes the surface or cropping soil, the bottom of that trench being broken up and manured as was the first one. Thus the whole area is cultivated to a depth of from 30 to 36 inches, and it soon becomes capable of yielding the finest crops possible. Where manure dressings can be afforded, moderate applications may be mixed with the soil as the trenching proceeds, thus making it ready for spring cropping.

Later, it becomes the rule in high-class gardens to fully trench 3 feet deep all the ground that is uncropped in winter; the extreme bottom soil being brought to the surface, the previous top soil being thrown in deep, or, as in some cases, mixing the upper and lower soils together in the process. The effect of providing vegetables with such a deep rooting medium is seen in luxuriant growth, comparative freedom from insect and fungal attacks, heavy crops, and, because the roots are deep down in cool, rich soil, they are capable of withstanding summer heat and drought. When in such seasons, comparisons are instituted between the growth and productiveness on deeply-worked soils and on shallowly-worked soils, the results prove effectively how profitable in every sense is this form of deep and liberal cultivation.

THE OPERATION OF DIGGING

The spade and the steel fork are by no means unimportant factors in soil cultivation. Whilst trenching must be performed chiefly during the winter months upon portions

of the garden free from crops, digging is a necessary operation all the year round, and especially on areas where the crops follow each other in quick succession.

Digging should be done well and deeply, whether the spade or fork is used. With modern tools of either description the soil may be moved easily to a depth of 12 inches. But a good, long spade or fork is necessary, and it should be kept as erect as possible, in order that it will penetrate its full depth. It is bad practice, merely for the sake of hurrying work, such as is sometimes seen when the digging is performed as piece-work, to take spits of greater thickness than from 4 inches to 5 inches, as in that way the soil cannot be completely broken up and pulverised. To merely lift large lumps of soil and turn them over, without breaking them, is not desirable, but neither is it wise to leave the surface soil fine and level, as such fine soil soon consolidates under heavy rains, and in that state it is less easily penetrated by the air. The great aim in pulverising ground is to allow it to become fully aerated.

Forking.—This term is customarily applied to the breaking up of the surface soil a few inches in depth. It is usually adopted in cases where the soil, although cropped, has yet by hard treading, or from other causes, become solid and comparatively impervious to air. Crops suffer when the soil is in such a condition, but in some cases hoeing is very difficult, hence it is necessary to use a steel digging fork and break up the hard surface. After this has been done the hoe can be used freely, thus increasing the benefit to the crops. Short or half-worn forks will render useful service if applied to this purpose. Not only are hard surfaces loosened and broken up, but weeds can be turned

in and buried. Once that is done, it is only through negligence if the spaces between crops again become weedy or hard.

Hoeing.—Work of this description is chiefly needed during the season of growth. The common assumption is that the hoe is a valuable tool mainly because it is a weed-killer. But where there is sufficient labour, and the season is not exceptionally wet, there should be no weeds to kill, for they may be prevented easily by frequent hoeings. Apart, however, from its service in destroying weeds, the hoe, if used frequently, is the means of producing and maintaining a mulch of loose soil on the surface, and this acts as an excellent check to evaporation.

The retention of moisture in hot, dry weather is of the greatest importance to crops, for the heat of the sun exercises a powerful attraction on that moisture, and nothing but a mulching of manure exercises a greater resistance to that absorption than a mulch of fine soil an inch thick. Whilst checking evaporation, it yet permits air to penetrate into the soil beneath.

Tools.—The tools needed for working the soil are spade, broad and narrow tined steel forks, draw and Dutch or push hoes, and wooden and iron rakes. In trenching very hard soils a pickaxe may be needful, but the implements already named will satisfy most requirements which arise in the tilling of garden soil.

Manuring.—All crops take from the soil certain elements of fertility, and, as in most cases vegetables are removed from the ground entirely, there is nothing left to dig in to replace what has thus been abstracted. Leguminous crops are exceptions, as these plants have the power of

PLATE II.

Kohl-Rabi.
(White Top.)

Kohl-Rabi.
(Green Top.)

Celeriac.

Jerusalem Artichoke.

Jerusalem Artichoke.

French Breakfast Radish.

Chinese Artichoke.

Chinese Artichoke.

fixing the nitrogen in the atmosphere, but they do not affect the general statement that if cropping is to go on continuously, a system of manuring, for the purpose of furnishing a supply of the abstracted elements, must be practised. Vegetables generally are gross-feeding plants, and if they are to be obtained at their best, they must grow quickly and without interruption, for succulence is a desirable quality in most of the kinds. Quick growth depends in a large measure upon there being present in the soil a sufficient quantity of plant food in a soluble condition, for it is only in this condition roots can absorb any element. Thus it is that manuring or feeding is essential to good vegetable culture.

Manures vary greatly in character. First there are animal manures, consisting of the excrement of animals ; next there are artificial, chemical or mineral products ; and further, there are organic manures, consisting of such things as green crops dug in, all descriptions of garden refuse, decayed tree leaves and stable litter.. These natural or green manures are inexpensive, yet they contain much plant food, and their use has a first-rate physical effect on most soils. Any vegetable matter can be used for the purpose, but that of a more woody nature should be burnt, for wood ashes soon become soluble and available to the plants.

Animal Manures.—Of animal manures, the best is obtained from horse stables. Horses being largely fed on corn, their droppings contain phosphates, potash, and nitrogen. The strawy matter obtained with the droppings furnishes food-elements also, but parts with them to the soil more slowly, as the straw decomposes. Beyond this the strawy matter furnishes valuable material in keeping the

soil porous. Notwithstanding this, however, the strawy matter should not be excessive, and where it seems to be so the longest should be shaken out and dried for use in other ways. When collecting horse droppings that have to be kept for a little time before use, the manure should not be placed in a heap, or fermentation will be induced and many valuable elements will be lost in volatile gases. Still further, it should not be exposed to heavy rains, as in such case many of the nutritive properties will be washed out and wasted. If the manure seems dry, let it be well moistened with house-slops, then be mixed and put into a heap. If it is turned again and moistened as soon as heat is generated, and that process is repeated a third time, the manure then partially decayed and short will be in first-class condition to dig into the soil.

Cow and pig manures differ materially from stable manure, in being wetter, colder, and more fitted for application to very light, sandy soils that ordinarily lose moisture too rapidly in summer. These wet, cool manures are best fitted for soil-dressing when thrown into heaps, occasionally turned and mixed with a considerable quantity of soot to destroy insects which may be present. In a crude or fresh state they are offensive, but if turned over a few times until they are partially decomposed, they may be worked into the soil with comparative convenience.

Poultry and Pigeon Manure.—Manure obtained from poultry and pigeons is of a very rich nature. It should be mixed with double its bulk of fine soil or ashes, and allowed to be in a heap for several weeks where no rains will reach it, during which time it should be turned over occasionally. It is well to mix it with the fibrous

matter of moss litter manure, because this latter material also requires to be kept for a period, and subjected to occasional turning in order to get it into the best condition for use.

Chemical or Artificial Manures.—These compounds owe these appellations to the methods of manufacture, as all of them, including natural guano, now so scarce, have to go through some process of preparation. Chemical manures are numerous, but they can be grouped into Phosphatic, Potash, and Nitrogenous Manures, these representing the chief elements found in vegetable life.

Phosphatic manures are primarily found in animal bones, either softened and made into bone flour by hot steaming, or crushed fine as bone dust, or converted into what is commonly termed superphosphate of lime by being dissolved in sulphuric acid. All these when pure are very valuable phosphatic manures. Basic slag is peculiarly artificial or chemical in its character. This is made by grinding very finely the slag thrown off in Thomas's process of converting iron into steel. It is of semi-metallic nature, and though fairly cheap, is much longer in becoming soluble in the soil than are dissolved bones; its effects are therefore more enduring. If employed for vegetable crops, it should be used a few months before the cropping season begins.

The ashes from burnt wood contain much potash, but they should not be exposed to heavy rains before use. Potash minerals are chiefly obtained from German saline deposits, under the name of Kainit, and resembling coarse salt. Kainit needs to be finely crushed, but there are refined forms known as Muriate or Sulphate of Potash, and

various other trade terms. Potash is most helpful in the production of woody matter in plants. What is known as Fish Guano, a very effective manure, is classed with the Potash combinations. It is composed chiefly of the bones and refuse of common fish, dried or otherwise prepared at the fishing ports.

The primary Nitrogenous manure of a mineral or chemical character is Nitrate of Soda, obtained from deposits found in South America, which have proved of enormous value. It is a quickly soluble salt, and should be crushed very finely before it is applied to the soil. The other nitrogenous manure is Sulphate of Ammonia, a chemical product created in the home process of gas manufacture; consequently it comes from coal. This manure can be used in a similar manner to Nitrate of Soda. Both manures being so quickly soluble, they should be applied to young growing crops at the rate of 2 lbs. or so per rod, and be at once hoed or forked into the soil. Three lbs. of bone flour, 3 lbs. of Kainit, and 2 lbs. of Sulphate of Ammonia, or Nitrate of Soda, crushed and mixed, make an excellent dressing for one rod of ground. The general effect of nitrogenous manures is to increase the green parts of a plant, therefore they are most valuable for green vegetables, whilst their stimulative effect upon grass is well known.

Sewage Manure.—Crude sewage matter, consisting primarily of human excretions, may, where there is no ordinary drainage into sewers, be mixed with soil and allowed to become dry, when it may be used as a ground dressing. At the same time it is not by any means one of the most desirable fertilisers. All urine may well be saved and utilised, for when mixed with ordinary house slops

and exposed for about twenty-four hours in an open tub, it may be used for growing crops as liquid manure. The most useful way to utilise both solid and liquid sewage in a raw state is to have them well mixed in a cesspool, then to pump some out daily into an open receptacle to be warmed and aerated, before being applied to the ground. Commercially, the best product of sewage is found in native guano. In this case, the solid matter is precipitated in tanks, dried, crushed fine, and sold in bags. It is far from being rich manure, but as it is offered cheap, it usually repays its prime cost.

Green Manures.—Plots of soil that have to be trenched during the winter months must, of necessity, remain uncropped during the whole of that period. But it is not always advisable to permit land to remain uncropped that is merely to be dug. In such a case, provided it is not intended to plant the ground with some form of Brassica, it may be sown with Rape, Tares, or Turnips in September. Any of these crops will form a dense, green growth by March, which, if dug in, will provide the succeeding crop with a valuable manure, and the effect of such green manuring on the physical character of the soil is excellent.

CHAPTER II

VEGETABLES WITH TAPERING ROOTS

BEET-ROOT (*Beta vulgaris*)

BEETS are represented by long and round rooted forms, and these are shown in the coloured illustration. There are many tapering varieties bearing diverse names, but the only good variety with round roots is that now universally known as Crimson Globe. The original Egyptian turnip-rooted variety gave flattish roots of coarse texture and indifferent colour. The true Crimson Globe roots are rather deep, globular, or approaching to oval in shape, and the flesh of a good stock is of a deep blood-red hue and refined texture. These roots grow almost entirely on the surface of the soil, and have the merit of being fully exposed ; hence the largest or best can be readily seen. From a sowing made in the open ground at the end of March, good roots can be obtained by the end of June. This form of Beet can be induced to produce serviceable roots much earlier if sown in a frame on a bed of manure and leaves, which will furnish a gentle heat. A piece of ground for the outdoor sowing should be selected which was well manured for the previous crop. If this is forked deeply, drills may be drawn at 12 inches apart, and the seeds sown very thinly in the drills. When the seedlings are 3 inches in height, they must be thinned out until they

are about 4 inches apart, or even 6 inches, if specially large roots are desired. The treatment in summer consists chiefly in hoeing the ground frequently and in preventing weeds.

Long-Rooted Beet.—This type is represented by more than twenty named varieties; some of these, however, do not exhibit material differences. The roots are of tapering form, and should be about 12 inches in length when fully grown, broad at the shoulder, tapering gradually, and free from root or abrasion to the very point of the fine root. Some are of mixed grain or colour, being red and white, but these are inferior and should not be grown. Others have refined flesh of a deep crimson colour, or of a rich purplish tint, or almost black in colour like the variety known as Cheltenham Black. But all these are equally good when well grown and properly cooked. There are differences also in the leafage: some varieties, like that known as Pine Apple, have flattish spreading foliage; others, like Dell's Crimson, have deep-red leafage; others have tall metallic green leaves, and the Cheltenham Black may always be known by its dwarf, spreading, silvery-green foliage. Whether presented in a cooked state at table, or staged for exhibition where the nature and colour of the flesh is tested with a knife, the qualities most favoured are good colour and texture.

Long Beets are apt to develop side roots or ungainly forms in ordinary garden soil, especially where it is only worked shallowly, or where fresh manures have been applied recently. To prevent that trouble, some cultivators have the ground specially trenched and manured deeply; others cultivate the crop on celery ridges, but the most radical practice is to make holes with a stout, sharp stake or iron

bar, 16 to 20 inches deep, 6 inches apart, along several rows, and to fill the holes with finely sifted old potting soil, then to sow three seeds on the top of each and cover them. The soil in these holes should have been made very firm previously. When the seedlings appear only one should be left, the others being pulled out. Under such conditions, handsome, clean roots may usually be obtained. As the long-rooted varieties of Beet continue to grow late into the autumn, sowings of one or more varieties may be made late in April and another sowing late in May or early in June. Where the sowings are of the ordinary kind, drills should be made 12 inches apart and 1 inch in depth. The seed should be sown thinly and the young plants thinned out to 6 inches apart. The cultivation during summer consists of hoeing and cleaning the soil, but as birds are fond of the young leaves, it is well to dust the seedlings freely with soot after dew has fallen, to render the foliage obnoxious to the feathered depredators.

Wintering the Roots.—This may be done in various ways. If alternate rows are lifted, the remaining rows can be well earthed-up on dry days at the end of November, thus materially protecting the roots from frost, for Beets keep so much fresher in the soil.

Those which are lifted can have their leaves twisted off, then be stored in a shed, cellar, or other frost-proof place, in layers, in dry soil or ashes, the leaf crowns only just projecting; or they may be laid closely together in well pulverised soil beneath a hedge or fence, or under branching trees, the roots standing almost erect, but covered with fine soil over the shoulders. With the further protection of a covering with straw litter, fern, or tree leaves,

PLATE III.

TYPES OF CARROT

Favourite.

Long Surrey.

New Red Intermediate.

Early Nantes.

Early Gem.

in hard weather, the roots will keep in a fresher condition than they would in a store.

CARROT (*Daucus Carota*)

Carrots can be obtained fresh for use during the greater part of the summer, and stored roots are available during winter. It is no wonder, therefore, that the Carrot is grown universally. There is no special limitation in this root to one form or variety or to one season of growth. The small Early Gem is sown on hot beds in frames for pulling in the month of May, and a successional sowing of the same variety may be made on a warm border out-of-doors. Sowings of Early Nantes, Model, and New Intermediate may be made in March, April, and May, and a sowing of either of these varieties, the Early Nantes especially, about the middle of July. From such sowings, young, soft, and succulent roots can be had during the greater part of the year, whilst the main crop of Intermediate, if stored carefully, will furnish a long supply for soups and general winter use.

Carrots of any variety, whether of the stump-rooted forms, such as Nantes or Model, or of those which send their main points deep into the soil, thrive best on deeply worked soil. The fine tap roots finding ample nutriment or moisture low in the soil, they are far less liable to throw out side roots. If the soil is shallow, and most food is found near to the surface, then side roots are produced, and the main roots are depreciated in form and value. It is not desirable whilst having the soil deeply worked to have the surface soil freshly manured. Not only does that tend to encourage the production of side roots, but it also

causes objectionable stains or blemishes. As with Long Beets, so with Carrots, if the soil is unfavourable to their culture, and handsome, clean roots are desired, then it is worth while to make deep holes, filling them firmly with fine soil and to sow two or three seeds on the top of each hole, thinning them ultimately to one plant.

The best Carrots have come to us from France, and those varieties which we grow most largely have originally borne French names, but they are now better known under English appellations. The practice of altering their names may be open to objection, but it is due to British seedsmen to state that they have done much to improve the respective stocks of French varieties. These are now so good that it seems doubtful whether improvement can go farther.

Early in January sowings of Early Gem may be made in frames on hot beds formed of manure and leaves, or in water-heated pits. A depth of 6 inches of good, fine soil is necessary, and the seeds should be sown in rows or shallow drills a few inches apart. The plants need little or no thinning, and when the roots are still quite small they may be pulled by the handful, trimmed, and cooked whole, thus furnishing a delicious dish. Where the first or successive sowing of Early Gem have to be made on a warm border out-of-doors, the best way to promote rapid growth is to throw out the soil 12 inches deep, on a space 6 feet by 4 feet. Place in this hollow some warm manure and tread it well down to a thickness of 9 inches. On that replace half of the fine soil that was removed, making a ridge round the bed to a height of 2 or 3 inches above the surface of the bed.

Seeds may then be sown as advised for the frame, cover-

PLATE IV.

Parsnip.
(Tender and True.) (Salsify.)

Beet.
(Globe.)

Parsnip.
(Hollow Crown.)

Beet.
(Blood-Red.)

ing them with fine soil and applying a watering. Then place some strips of wood across, resting them on the side ridges, and cover with mats. When the seedlings are up they can be exposed to light and air during the day, but should be covered again at night.

The larger stump-rooted varieties, Nantes and Model, or others of similar form, may be sown in the open ground in March, selecting sunny borders for preference. The main crop of Intermediate should be sown in drills 12 inches apart, both in April and May, to give a good succession. Whilst the shorter rooted varieties may be left at 3 inches apart in the rows, these main crop plants need thinning to from 4 to 6 inches apart, as they remain in the ground for a long season and need ample room to develop.

Once Carrot plants have become strong and have been kept free from weeds, they cause but very little trouble until the lifting and storing season, and it is only the main crop roots that need storing. If they are to be dry stored, the roots should have the tops cut off when lifted, then be stacked in layers in dry soil or ashes in any cool shed or cellar. But the roots keep fresher when laid thickly in well broken soil under the shelter of dense trees or a hedge. Some loose litter should be thrown over them if hard weather sets in.

Carrots are peculiarly susceptible whilst very young to the attacks of the Carrot Fly (*Psila rosæ*). The female fly deposits its eggs on the tiny plants, and the maggots which hatch from them eat off the roots. Liberal waterings with strong soot water, when the operations of the insects have commenced, are remedial, but by making the plants offensive with dustings of soot, or by mixing paraffin with fine ashes and strewing these latter quite early between the rows to

furnish an offensive smell, it is often possible to prevent the deposit of eggs. One of the best preventives of maggot is to earth up the plants liberally. The different types of Carrot are illustrated in the coloured plate.

PARSNIP (*Peucedanum sativum*)

There are happily but few varieties of the Parsnip in commerce ; hence selection is easy. The most widely grown variety is that known as Hollow Crown, so named because the fleshy roots as they swell throw up a ridge of flesh round the crown from which the leaf-stalks are produced. There may usually be seen at exhibitions a form of this variety with whiter flesh than the type, and it is known as Tender and True. Occasionally a variety having a sloping crown or neck is seen, and this is known as the Student. It originated many years ago, and when first put into commerce was very popular. At some exhibitions it is common to see Parsnip roots of extraordinary length, measuring as much as 36 inches from the crown to the point of the root. Such roots are smooth and handsomely tapered, but they have to be grown under special conditions, in prepared holes as described for Beets and Carrots, and very wide apart ; hence the method is far from being profitable, and it is not to be recommended.

The ground intended for Parsnips should be either trenched or dug deeply. If it was manured for a previous crop, so much the better, it being undesirable to have fresh manure in close contact with the roots. It is customary to make only one sowing of seeds, that being done early in March. The seeds are sown in shallow drills, drawn at 15 inches apart; for as Parsnips produce strong leafage, the

plants need plenty of room. The seed usually germinates very easily; hence it may be sown thinly. If large roots are desired the plants in the rows should be thinned out to 9 inches apart, but if smaller ones are favoured, then 4 to 6 inches apart is sufficient. Medium-sized, clean-skinned roots, broad-shouldered and fleshy but only 10 to 12 inches in length, are much the best to form good food when well cooked. In summer very little labour is needed beyond keeping the rows free from weeds and using the hoe to maintain a mulch of loose soil on the surface. Late in the autumn the leafage dies away, but the roots, being fairly hardy, may be allowed to remain in the ground all winter, except that it is wise to have some lifted and stored where they can be easily got at during severe frost when it is difficult to get roots from the open ground. The roots left in the ground will, however, be made all the safer if a ridge of loose soil is drawn over their crowns with a hoe on a dry day. Parsnips are frequently allowed to remain in the ground until, in the new year, new leafage is seen to be springing from the crowns. They should then be lifted and stored in dry soil, or ashes, in a very cool place, and kept as long as possible, to maintain the supply. The flesh of the Parsnip is sweet and watery, but its condition when presented at table depends on the cooking. If medium-sized roots are scraped, then cooked whole in a pot, being but just covered with water which gradually boils away, leaving the roots to finish off in the steam generated in the pot, they are then quite marrowy and delicious eating. Were Parsnips always cooked with care and in this manner, these nourishing roots would be more widely consumed as food than they are at the present time. All the same, it is rare to

find any garden or allotment in which Parsnips are not cultivated.

SALSIFY (*Tragopogon porrifolium*) and SCORZONERA (*Scorzonera hispanica*)

There is much similarity in the roots of Salsify and Scorzonera, although in other respects the plants differ widely. Salsify has narrower leaves than Scorzonera, but both plants grow about the same height. Salsify roots are quite white throughout, whilst those of Scorzonera are of a dark hue externally, but they have white flesh. Both roots are long, narrow, round, and similar in size. Seeds of either should be sown in April in shallow drills, 12 inches apart, drawn on soil which has been deeply dug but not freshly manured. If the seeds are covered and the soil roughly raked over, the plants may generally be seen above the surface after about ten to fourteen days. When sufficiently strong, they should be thinned out to 2 inches apart in the rows, as large roots are not required. The white-rooted Salsify is the best both in colour and in texture, and when well cooked and served to table with gravy or melted butter, it constitutes a delicious dish. On the Continent these roots so cooked are described as vegetable oysters, which is perhaps something of an exaggeration. Salsify is a remarkably productive plant, and a great number of roots can be produced on quite a small area of ground. It is the rule to class both roots under the term of "uncommon" vegetables, as they are not often seen in this country in a cooked state or on the exhibition table. None the less, a dozen quite white, clean, well-formed roots of Salsify should form an excellent dish and

be quite as meritorious as Parsnips. Whilst in the late autumn some of the roots should be lifted from their rows and be laid in thickly in soil in a sheltered place under cover, those left in the ground all the winter, if lightly protected from hard frosts by a thin moulding up of fine soil, will start into growth in spring and produce stems that make very acceptable table dishes. There is practically but one variety of each root.

HORSERADISH (*Cochlearia Armoracia*)

It is but natural that the name of this root, associated as it is with the radish, which is one of the pleasantest and crispest of raw edible roots, should be misleading to many. The Horseradish root is hard, very pungent—indeed, under certain conditions, painfully hot—and quite unfit for food, cooked or raw, if consumed as roots generally are. Its use is merely that of a condiment, and its object when partaken of in finely scraped form with meat, is to stimulate the appetite rather than to serve any other function. The Horseradish is a native of Great Britain, and the roots are therefore perfectly hardy. Its value as a commercial product seems to depend chiefly on the methods of culture adopted to produce the roots.

In spite of its hardiness and the ease with which it can be grown in Britain, great quantities of roots are imported from Holland. This is one of the things difficult to understand, except for the reason that the imported roots are of a much milder and more fleshy nature than the roots grown at home. That mildness is, after all, but a matter of cultivation, and if portions of the Fen lands of Lincolnshire were devoted to Horseradish culture, there is no doubt that

quickly grown, mild roots could be secured equal to those purchased from Holland. In British gardens Horseradish is usually treated very indifferently, if it can be said to receive cultivation at all. The best practice is as follows :— Early each winter, so soon as the foliage has died away, open a trench at one end of the bed and get out every root, taking care that no piece, however small, is left in the ground. All the larger roots, being first trimmed of side rootlets, should be laid in together in soil in a sheltered place, the green crowns only projecting, and, if hard weather sets in, be protected from frost with a coat of straw litter. These roots can then be got out for use at any time. All side roots, or small main roots having crowns, should be further trimmed from all side portions and be straightened ready for re-planting. In the meantime a small area of ground, having been deeply trenched and given a liberal dressing of short manure, worked into it especially low down in the soil, the longest of these roots or sets having crowns should be dibbled in first, the crowns being just buried. They should be planted 12 inches apart each way. Then all the shorter roots without crowns should be dibbled in fully 10 inches deep, and well covered up, putting them at the same distance apart. When growth is seen (and leaves from the latter sets will be much later in appearing), the hoe must be used freely on the bed, and a couple of light dressings of sulphate of ammonia at intervals of a month, in July and August, will assist growth materially. An occasional soaking with liquid manure or house sewage will also do great good. The more rapid the growth and fleshy the roots, the milder and better will they be for domestic use.

Radishes.—For these, see next chapter.

CHAPTER III

ROUND ROOTS, BULBS, AND TUBERS

ARTICHOKE, CHINESE (*Stachys tuberifera*)

THE very quaintly formed, elongated white tubers of this Chinese plant have no relation whatever to the Jerusalem or Globe Artichokes. The growth of the plant is dwarf and bushy, rising to a height of about 20 inches. Several stems are produced, and these bear sage-like leaves that die away late in autumn, leaving good quantities of the little tubers in the soil. Being hardy, these may remain in the soil through the winter, provided the ground is protected from frosts with a covering of litter or fern fronds. The soil selected for planting should be light and well tilled, and the position fairly warm. The month of March is a good time for planting, and seed tubers of a good size should be selected for the purpose. These should be dibbled in in rows 20 inches apart, and the tubers should be placed 12 inches apart in the rows, in holes from 4 inches to 5 inches deep. The tubers break into growth only from the points of the ends remotest from the root stems. During the season all that is needful is to keep the bed clean and well hoed, but if the site is a very dry one an occasional soaking with water will do great good.

When the tubers are required for cooking, they should

be lifted with a digging fork, the soil being thrown out and spread, as then every one of the white tubers can be seen. They should be at once cast into water, as exposure to the air causes the skins to become discoloured. When well cleansed, they should be gently boiled, and when softened, have the water in the pan poured off, the remainder of the cooking being done in the steam. The tubers should next be put into a frying-pan, and with some butter be gently browned. Treated in this manner and served with gravy, they make a very delicious dish.

Chinese Artichokes have been cultivated in this country some twenty-two years, having been introduced in 1887, yet they have not become a popular article of food. That is no doubt due to ignorance as to the best way to cook them and present them at table. The quaint little tubers are illustrated in the coloured plate.

ARTICHOKE, JERUSALEM (*Helianthus tuberosus*).

Seeing that this tuberous-rooted member of the Sunflower family is a native of North America, and has not the slightest connection with Palestine, it is a matter for wonder how the prefix of Jerusalem originated. Some writers have assumed that it is a corruption of the French term "Girasole," which is by no means improbable. In any case the prefix would not be used here were there not other and very distinct Artichokes in cultivation. A native of a cold region, this plant is quite hardy, but in gardens the tubers are usually lifted from the ground early in winter, stored in a cool place, and planted again in the spring. The stems or growths are of summer production only, and they die away naturally in the autumn. Many years since, when the Potato disease was

so destructive, there was some hope that, seeing that this Artichoke is immune from that disease, it would be possible to breed tubers that would become good substitutes for the Potato. But *Helianthus tuberosus* does not produce seed in this country; indeed it rarely flowers, hence were there other forms with which to intercross it, such fertilisation is impossible; therefore, with one exception, the tubers in form and in flesh are much the same to-day as when they were first introduced here, nearly three hundred years ago. The exception is the production of a white-skinned tuber, which is rather better shaped than the old coloured variety, and if less large, it possesses superior flavour. The defect of the tubers of either form, when cooked, is that the flesh is watery—indeed, is what is known as soapy in texture—hence they are not favoured as an ordinary table dish. As a medium for soups, however, they are excellent, as they impart a flavour not obtainable from any other vegetable. The tubers generally produce one shoot only under ordinary cultivation; this growth is a stout, hollow stem, reaching, on good soil, to heights of from 6 to 9 feet, and bearing large, broad, lanceolate leaves of a rough or hirsute appearance. (A tuber is shown in the coloured plate.)

The ground for planting should be prepared by deep digging in the winter, but the manuring should be very moderate, as it is undesirable to favour the production of large tubers. When the crop is lifted in December for storing, a sufficient number of clean, good-shaped tubers of medium size should be selected and stored in dry soil, sand, or ashes for planting in the spring. Planting should be done during the month of March in rows 2 feet apart, the roots being 15 inches apart in the rows. Once growth

is seen, it is only needful to keep the ground well hoed and free from weeds, but when the stems are 4 feet in height a little soil may be drawn round them. When the stems and leaves die away in autumn, cut them nearly to the ground, removing them to the fire heap. The tubers may be lifted for use as desired.

CELERIAC (*Apium graveolens*)

This is a turnip-rooted form of Celery, having at the base of its leaf stems a swollen root stem, which is of turnip-like form, but by no means so handsome or smooth. Its appearance is shown in the illustration. These tuber-like roots are excellent when cooked, peeled, and served to table with gravy ; or they can be peeled raw, sliced, and mixed with salading, or be used simply as flavouring in soups or stews. Being of a hardy nature, it is wise to grow a medium quantity of this plant in gardens, in case blanched celery is killed by exceptionally hard weather. We have found that by simply moulding up roots of Celeriac with loose soil in the winter they will withstand severe frosts. But the use of such protection should not prevent some of the roots being lifted and stored in such a way that they can be got ready for use in hard weather. If stored in a cool shed and packed in soil, they will keep fresh for several weeks together.

The best time to sow seeds of Celeriac is in March or April. One sowing of seed in a shallow pan or box will generally furnish a sufficient number of plants. When these are 3 inches in height they should be lifted carefully and be dibbled out under a hand-light, or in a cold frame, or into shallow boxes, and kept for a week or two in a greenhouse. Later, when hardened, they will be ready for trans-

planting into a warm border out-of-doors. Provided the soil has been deeply worked and well manured, there is no need to form trenches, but it is well to draw fairly broad, shallow drills, and put the plants into these, as later they will need liberal waterings. The rows should be 2 feet apart, and the plants 12 inches apart in the rows. Beyond keeping the hoe in frequent use and giving liberal waterings, with occasional applications of liquid manure, little further cultivation is needful. Where it is found inadvisable after roots are fully grown to leave them in the rows, they can be lifted and be laid in thickly on the warm side of a hedge or wall, and, in the event of hard weather, covered with straw litter or tree-leaves.

ESCHALLOT (*Allium ascalonicum*)

This may be regarded as an old-fashioned and pedantic way of spelling the name of what are now so commonly called "Shallots," but it has the merit of being exact. It is specially interesting to note that this bulb is popular, in spite of its strong, pungent taste. In every cottage garden or allotment a few rows are seen, and the bulbs are usually well grown, for as fine samples are seen in these gardens as are produced elsewhere. Cottagers use them largely for ordinary flavouring, because they are milder than Onions, for ordinary salading in a raw state, and for pickling. Bulbs of medium size are the best for planting. The ground should be deeply dug and liberally manured in midwinter, and planting should be done about the second week in February, in rows 12 inches apart, the bulbs or sets being placed 9 inches apart in the rows. The bulbs should be firmly pressed into the soil, but their points should be left exposed. They soon commence to grow, and the subsequent culture

consists in keeping the soil free from weeds and stirring the surface. If the clusters of new bulbs which form from each planted set seem to be rather buried in the soil, it is desirable to remove some of the soil from about them with the hand, for the more fully exposed they are to light and air, the better do the clusters swell. About the middle of July, as a rule—but much depends on the quality of the soil and its aspect—the clusters may be pulled and laid out on boards or an old sack until thoroughly dried ; then the clusters should be broken up, the bulbs cleaned and trimmed, and afterwards stored on a shelf in a dry, cool store. There are two varieties of the Shallot, the Large Red or Russian and the true Old Brown variety. This last is the best for all ordinary purposes, although the Large Red produces the heaviest crop of bulbs. Where these bulbs are subjects for competition—and they are very commonly shown at cottagers' exhibitions—it is desirable to have separate classes for the varieties, otherwise the largest bulbs are too often awarded the prizes. A dish of Shallots should be very even in size, clean, bright, free from spots, neatly trimmed, and of medium size. Sometimes they are presented with the clusters unbroken, as shown in the illustration, and this is, on the whole, the severest test of culture and cropping. Shallots can be raised from seed, but by far the best crops are obtained by planting bulbs. The Shallot is a native of Palestine, and was introduced here in the sixteenth century, but it is very hardy, and it ought to become more popular as an article of food.

GARLIC (*Allium sativum*)

This is a whitish bulb composed of a series of scales, and having specially strong flavour. Garlic is not in commerce

in this country, and it seems to enter more into Continental than British cookery ; but it is liable to be called for sometimes for special purposes, and therefore some roots should be cultivated each year. A dozen or two of the cloves or bulbs, planted in any spare piece of ground, but especially in contiguity to the usual Herb bed, is all that is needful. These cloves may be planted at about 10 inches apart in rows, being firmly fixed into the soil after it has been dug. That is best done in the month of February. The growth consists of narrow, flag-like leaves. When growth is complete the bulbs may be tied by their leaves into bunches, and be suspended in a cool place for the winter.

KOHL-RABI (*Brassica oleracea Caulo-rapa*)

This, like the Turnip, is a species of Brassica, but it differs from any round, fleshy root in having, in place of one central leaf crown, several eyes, from which one leaf or so arises. The roots are produced on the surface of the soil ; they are round, have white flesh, but the skins are harder or more woody than the skins of ordinary Turnips (a typical root is depicted in the illustration). The chief varieties suitable for gardens are the Short Top Green and the Early Purple. A liking for these roots has to be acquired, but they are specially commended for use in hot seasons when ordinary white Turnips are scarce, or dry or woody, and they are much favoured in hot, dry countries. The seeds should be sown in a small bed, lifting and transplanting the seedlings, when a few inches in height, into rows 18 inches apart, putting the plants 10 inches apart in the rows. Another method is to sow seed in drills on

fairly good soil at the distance apart named, then thin the plants; but the practice of transplanting is most favoured.

Before Kohl-Rabi is cooked, it is needful to trim off the leaves and wash the bulb-like growths. They should then be boiled well, and afterwards the thick skins must be removed. Some day it may be found possible to obtain with Kohl-Rabi some kind of cross with a variety of the sweet Turnip, and thus obtain an edible root of greater value. As its name implies, the plant is of German origin, and in this country seems, so far, to be more favoured as a field crop for cattle than as a kitchen-garden product.

ONION (*Allium Cepa*)

Probably but few Onion growers know that over sixty named varieties are, or have been, in commerce. In *The Vegetable Garden*, Monsieur Vilmorin, of Paris, stated this much many years ago, and even then he did not enumerate those found in British seed-lists; but many of these latter are mere synonyms, whereas few, if any, of those mentioned in that book lack distinct characters.

The skins of Onions may be white, yellow, red, deep red, or brown. In form they are deep egg-shaped, globular, oval, or round and flat, as shown in the illustration. Some varieties have very small, quick maturing bulbs; others vary in size up to the 3-lb. bulbs, which under special culture may be obtained from the variety Ailsa Craig. There is one kind known as the Potato Onion, because it forms from planted sets clusters of bulbs, as the Eschallot does; and there are Tree Onions, which produce stems as if to

PLATE V.

ONION.
(Crimson Globe.)

ONION.
(Silver Globe.)

ESCHALLOT.
(Large Red.)

ONION.
(Bedfordshire Champion.)

ONION.
(Sutton's Exhibition.)

ONION.
(Ailsa Craig.)

flower and seed, but the products on the tops of the stems are clusters of bulblets. These have little edible value, and are more grown as curiosities than as useful crops.

One of the oldest of cultivated vegetables, and one well known to the early Egyptians and Romans, it seems likely that the earliest varieties had small bulbs, and lacked the fine appearance and heavy-cropping qualities seen in the Onions of to-day. In the early part of the nineteenth century our finest bulbing Onions were the White Spanish, James' Keeping, Deptford, and Reading, of winter keepers, and the Tripolis for autumn sowing. The first great break from old varieties seems to have been created by the introduction into commerce of Ailsa Craig or Cranston's Excelsior, two named varieties that show little, if any, difference. These new varieties produced bulbs, even under ordinary culture, quite double the dimensions of the older and commonly grown Onions, and, having since been largely employed for intercrossing, several others of large bulbing habit have been put into commerce. We have also imported some fine Onions from America, and of these the Southport White and Red Globes are specially good; but they are hardly to be met with now under those names. Fifty years ago Onions seldom exceeded 6 oz. in weight, but now we frequently see specimens of Ailsa Craig, Record, and others which weigh 3 lbs. each, being handsome, well matured bulbs. Probably it will be said, "And quite large enough, too."

The ordinary methods of culture in this country enable three different sowings of seed to be made.

Autumn Sowing.—First there is the customary autumn sowing, made at the end of August. If the seed is sown too

early, the plants are apt to "bolt," to flower prematurely in the spring; but if sown too late, the plants are hardly strong enough to withstand the winter. In most cases the third week in August is an excellent time, assuming the ground can be caught in good condition. As a rule, autumn sowings are made on ground from which early Potatoes or Peas have been removed, and in such cases, unless the soil is very poor, fresh manure should not be added, as the soil will be quite rich enough. One result of very rich ground is that the plants grow too quickly and become too tender to withstand frosts. It is enough, therefore, after the early crop has been removed, to have the ground well forked over and thoroughly pulverised; if it is very light and loose, it should be made firm by treading with the feet. The drills should be drawn at 12 inches apart, and the seed sown thinly and covered with fine soil. After growth begins, little can be done to assist the plants other than by using the hoe freely, and thus keeping the surface soil clean and loose. If specially fine bulbs are required the following summer from an autumn sowing, carefully lift some plants from the rows early in March, taking every care to retain all the roots uninjured, and dibble them out at once on to ground that has been deeply dug and liberally manured; these will develop much finer bulbs than those left in the seed drills. The size of those left in the rows, at 6 to 9 inches apart, can be much increased by occasional waterings with liquid manure during the summer. Cottagers and allotment-holders frequently produce bulbs for exhibiting in July and August, from these autumn sowings, much finer than are often seen in more pretentious gardens. The Giant Roccas and Globe Tripolis are commonly recommended for sowing in

autumn. These produce large bulbs that are liable to split, and both soon decay after harvesting. Such hard and fine varieties as Ailsa Craig, Cranston's Excelsior, Main Crop, or A1 are much better for this sowing, as the bulbs are finer, handsomer, harder, and better keepers. A special good point in regard to autumn sowings is that the young plants escape attacks from the Onion Maggot. Where it is purposed to transplant all the autumn sown Onions in spring, a small bed sown broadcast is sufficient. In transplanting, great care should be taken not to bury the base of the plant in the soil, but the roots should have every chance to penetrate deeply, as Onions are essentially deep-rooting plants.

Spring-Sown Onions.—The main crop of Onions is raised from seeds sown in the open ground during the month of March. In olden days it was the common rule, whilst working the ground into very fine tilth, yet to make it specially hard prior to sowing the seed. Not only was it the custom to tread the ground well with the feet, but also to have it well rolled before drawing the drills; this practice has been abandoned. If ground is trenched deeply and a heavy dressing of half-decayed manure worked low down into it in midwinter, the soil settles down under the influence of the weather and becomes sufficiently firm for sowing in spring. During the operation of seed-sowing, considerable treading of the ground is unavoidable, and this is quite sufficient for the purpose. By using an ordinary garden line, and a couple of measures at each end, 12 inches long, shallow drills can be drawn with a hoe, very correctly and evenly. Seed should be sown rather thinly, in order to prevent labour in thinning the plants later, and consequent waste. In covering the seed it is

common practice for the sower to push in the soil from each side of the drill with his boots, then roughly rake the beds over, but not leaving the surface too fine. Where there is fear that the Onion Fly will attack the young plants, soot may be thickly dusted over the entire bed, as soot is to some extent a deterrent to the insect. When the plants are well through the ground, a further dusting of soot may be given to render them distasteful in taste and perfume. Thinning should be done as soon as the plants are 3 inches in height, not by pulling the plants, but by the aid of a sharp, narrow hoe, cutting them off, and in that way leaving the soil still firm about the plants which remain. Firm soil is an excellent preventive of the maggot, but should any plant appear to die away, that is evidence that the maggot is at work. The best palliative is found in making strong, clear soot-water in a tub, keeping the soot in a coarse bag, and soaking it well for twenty-four hours, then watering the Onion rows with it, and especially those parts where the maggot is in evidence. This pest only preys on outdoor Onions sown in spring; hence the value, where it is habitually troublesome, of making autumn sowings or planting in spring from glass-raised sowings. If the young plants safely escape the maggot trouble, the only other danger which Onions have to encounter is from an attack of the Mildew, a fungal disease which is very destructive in cold, wet seasons, for the smooth, tubular leaves are such it is difficult to get any description of dressing to attach itself to them. Whenever a whitish mould or spots are seen, if liberal dustings of fresh slaked lime and sulphur are given when the plants are damp, little else can be done. Gentle sprayings with

the Bordeaux Mixture, containing a little treacle or soft soap, may also prove to be a useful palliative or remedy.

In dry seasons Onion breadths may be much helped if very light dressings of finely crushed sulphate of ammonia or nitrate of soda be strewn between the rows and hoed in. Such a dressing may be given early in June, and again in July, but each dressing must not exceed 3 lbs. per rod. The hoe should be freely used between the rows all through the summer, great care being taken not to injure the Onion bulbs. As to the distances apart to which plants may be thinned, much must depend on requirements. For large bulbs, thin them out to 6 inches apart, but for bulbs of smaller size, from 2 to 4 inches affords ample space. The entire crop is generally ripe and ready to pull early in September, but the time and condition of maturation vary with the seasons.

In order to remove the bulbs quickly, a sharp Dutch or push hoe may be run under the Onions along the rows, but cutting deep, thus severing the roots without harming the bulbs. If the weather is dry, allow the crop to lie on the soil for three or four days to fully dry and harden; but if the weather is wet, remove the bulbs to a store or shed and lay them thinly on the floor to dry. When quite dry, the rough loose skins should be rubbed off, and the bulbs placed thickly on trellis shelves in a cool store. During a spell of wet weather some of the more even-sized bulbs may be selected and tied, rope fashion, to sticks coated with straw. If these are suspended, the bulbs will keep in good condition for several months.

Onion bulbs are fairly hardy, but need to be kept cool and dry; if kept in a close, damp, or warm place,

premature growth is induced, and afterwards the bulbs are useless.

For ordinary spring sowing there is a wide range of selection of old-established stocks. Improved Reading, Bedfordshire Champion, Deptford, James' Keeping, White Spanish, Danver's Yellow, and Grant's Sultan are all good. Of newer and bigger bulbed varieties Ailsa Craig, Record, Excelsior, Maincrop, A1, Sutton's Globe, and Rousham Park Hero are the best. Of white varieties, to produce small bulbs for pickling, the best are Queen, Silver Skin, and Early White Rocca. The finest of the red forms are Red Globe, Red Wethersfield, and the old Blood Red. For a smaller selection Ailsa Craig, A1, Maincrop, and Crimson Globe produce good bulbs, and they keep well, whilst for quite small bulbs for pickling none is better than the Silver Skin.

Onions Raised under Glass.—Two important results follow from raising Onion plants by sowing seeds under glass early in the year and removing the plants thus raised to the open ground. The first result is that far finer bulbs can be produced than are obtainable by the ordinary methods. The second result is that the plants, when put out, have become hardened, and consequently they are not attacked by the Onion Maggot.

The practice of sowing Onion seed under glass is comparatively modern. It has developed since the introduction into commerce of that singularly fine bulbed variety Ailsa Craig, and since liberal money prizes have been offered for the finest and heaviest bulbs. Under ordinary conditions of culture, and even from autumn sowings, bulbs weighing as much as one pound were regarded as unusual. But with

the newer method and newer variety it is possible to raise bulbs weighing 3 lbs. each, perfectly solid, handsome specimens, capable of keeping in good condition for several months. The practice has become so common, there appears to be a demand for Onions weighing from 1½ lbs. to 2½ lbs. in most large establishments. Not only are these large bulbs very mild in taste and smell, but they are delicious food when baked or stewed, and this much is realised by the public. These large bulbs have also a considerable value as producers of seed, for it is found that seed obtained from these reproduce much finer bulbing stocks, even if sown in the open ground, than seeds obtained from ordinary or medium-sized bulbs. That fact has caused seedsmen to grow many large bulbs specially for the production of seed stocks. As regards competitive exhibitions, a dozen fine bulbs, weighing each from 2 lbs. to 2½ lbs., invariably constitutes a strong feature in any vegetable competition.

The seed should be sown during the month of January, and early in the month rather than later. Broad pans or shallow boxes, well drained, should be filled with a compost of one half turfy loam, the other half being leaf-mould, manure from a spent hotbed or mushroom bed, passed through a coarse sieve, and some sharp sand and soot. The seeds should be sown moderately thin, so as to give the young plants ample room. A 12-inch pan or box will furnish room to raise 100 plants without their being unduly crowded, and a few pans or boxes do not occupy much space ; but for large gardens several hundred plants may be needed. When the seed is sown, press it, with the points of the fingers, gently into the soil, and cover with a very thin

surface of fine soil. Give a good sprinkling with tepid water, then stand the seed utensils in a warmth of about 50°, it being undesirable to excite the seed or plants too rapidly. The plants should be fully exposed to the light, whether raised in a box or frame, and as soon as they are 2 or 3 inches in height they should be lifted with the utmost care and dibbled into other pans or boxes, putting them 2 inches apart each way. As the sunlight increases, so do the plants become stout and erect, and later, when 6 inches in height, they may be placed in a cold frame, kept close for a few days, then gradually hardened by admitting more air, until the plants can be exposed to the air altogether. During this period of growth after the transplanting, gentle waterings must be given the plants, and the soil in which they are growing should be very slightly stirred. Should it show a tendency to become close or mossy, dust the surface with a little soot or freshly slaked lime, gently stirring it in.

Planting Out.—We have previously described the process of deep culture, and, to produce specially fine Onions the ground should be worked from 30 to 36 inches deep. In that process, not only should layers of well decayed animal manure be worked into each layer of soil, even the very deepest, but the whole should be well mixed in the process. This work should be done in January, to enable the body of soil to settle and the manure to be incorporated into it. It is desirable to give the ground a heavy dressing of soot, and some 4 lbs. of bone flour to the rod area, just before the planting is done. This dressing should be lightly pointed in with a fork a day previous to the planting. Planting should be done only on a dry day, as it is undesirable to make the soil sticky. The rows for

the plants snould be marked out with a line 15 to 18 inches apart. The plants should be lifted from the boxes or pans with a trowel, great care being taken to disturb the roots as little as possible. They should be securely fixed in the soil by the roots, not burying the stems, putting them at 12 inches apart in the rows, which is ample room for the plants to develop perfectly. The end of March, or early in April, is an excellent time for effecting this transplanting, but some consideration must be given to the nature of the weather prevailing. Surface feeding may consist of a sprinkling of soot, light dressings of guano lightly hoed in, and in dry weather, heavy soakings of weak liquid manure.

If the weather at planting time is very dry, give the plants one good watering to settle the soil about the roots. During the summer keep the surface soil clean and stirred by using the hoe, and if a mulch of manure from an old hotbed can be given, it will be helpful.

The harvesting of the bulbs when ripe should be done with great care. Not all may be ready to lift at once, but those most ripe may be got up during the month of August, loosening them first with a garden fork. If the weather is dry, the bulbs may lie where lifted for a few days to dry, but if it is wet, put them into a greenhouse or dry shed. Some two or three weeks may elapse before all are ready to lift. When the bulbs have become quite ripe and dry and each has been rubbed through the hands to clean them, each bulb should be laid carefully on an open shelf, to which plenty of air can get access.

Specially fine bulbs are required for exhibition. For this purpose the most handsome and spotless specimens should be selected, and may be laid on a thin carpet of

wood-wool temporarily. Very fine stocks of Ailsa Craig or Cranston's Excelsior are the best to furnish exhibition bulbs.

THE POTATO (*Solanum tuberosum*)

Whether this valuable vegetable has descended from the species *Solanum tuberosum*, or *S. etuberosum*, appears to be a matter of uncertainty, for some recent results obtained by Messrs. Sutton & Sons, in growing numerous species in pots and in the open ground, lead them to believe that it is the latter species, rather than the former, which must be credited with the parentage. Possibly during the centuries which have elapsed since the Potato was first cultivated as food, some confusion of names may have taken place, and Messrs. Sutton's *S. etuberosum* may, after all, be a variety of *S. tuberosum*. It would be unreasonable to assume that in its native habitat of South America the original Potato plant was known only as a wild species. The edible qualities of the tuber were not only well known to the inhabitants of that continent, but it is probable that the plant was cultivated as a food product, and this explains why tubers or seeds were brought to Europe. At the same time, there is no reason to assume that garden varieties had been raised; indeed, although the introduction of the Potato into Europe took place towards the end of the sixteenth century, it is probable that little in the way of raising new varieties was done until well into the eighteenth century. Even at the beginning of the nineteenth century there were few new varieties, and these were of medium quality and poor cropping habits; it was not until about 1850 that any appreciable development took

place. With the production of the once famous Regent, Lapstone, Fluke, Fortyfold, and Lancashire Kidney, not omitting the wonderful Ashleaf Kidney, good eating qualities and a free cropping habit were obtained. However, these fine varieties, and Paterson's superb table variety, Victoria, and others of less repute raised by Mr. Robert Fenn of Woodstock, almost entirely disappeared during the seventies, when the potato disease raged so furiously, and in many localities so decimated the stocks as to cause alarm and disaster.

At about this time small quantities of some of the leading varieties raised by Pringle, and other cultivators in the United States, were imported to Britain, where they sold for high prices. Of these we still value Early Rose and Beauty of Hebron, but many others have disappeared. They proved incapable of withstanding the fungus disease, *Phytophora infestans*. But some of them were used as seed or pollen parents, intercrossing them with British varieties, and in this way were produced what became known as the Anglo-American Stocks, which in turn were the parents of the varieties that made Potato culture so popular and profitable in the opening years of the twentieth century. That most famous Potato, Magnum Bonum, a variety which, for a time, was the salvation of the Potato-growing interest, because it resisted the disease for several years, has always been assumed to have come from the crossing of Victoria with Early Rose. In any case, that variety became the turning-point in the fortunes of the Potato-growers, and it was followed by splendid varieties in rapid succession, down to the not less famous Up-to-Date and its progeny. Good Potato crops are now obtained even

in the most unfavourable seasons, such as was that of 1909, and all fears of a Potato famine have been dispelled. In present-day gardening, with scores of fine varieties to select from, early, mid-season, and late, it is quite easy to secure an abundant supply of Potatoes all the year round.

PROPAGATION OF POTATOES

Under existing cultural conditions, the propagation of Potatoes is chiefly carried out by the agency of tubers. So much is that the case that no one thinks of propagating by seed. Only by the former method, or by cuttings, it is possible to perpetuate recognised varieties. If seed is employed, no reliance can be placed on the nature of the product. But seed apples are now seldom formed on Potato plants, for pollen is not produced freely on many varieties, and natural fertilisation is exceedingly uncommon ; hence seed is rare. Fertilisation has usually to be done through human agency, and it is often difficult to find sufficient pollen to cross-fertilise another variety. If, however, but two or three flowers are successfully pollinated, producing so many seed apples, or fruits, each one containing from fifty to sixty seeds, an ample supply of plants for the production of new varieties can be raised. Of the seedlings, probably no two will be alike, especially if the selected parents were greatly dissimilar. When cross-fertilisation is now attempted, it should be with the aim of securing heavy-cropping, disease-resisting varieties, capable of producing good crops of medium-sized tubers suited for the table, rather than crops consisting of a few huge tubers and some very small tubers. Amateur growers who have the finest varieties of Potatoes in commerce to work with may still

PLATE VI.

WHITE POTATOES.

Sir J. Llewelyn.

Windsor Castle.

British Queen.

Factor.

find much pleasure in seeking to raise new and superior varieties.

In the propagation by tubers, on the contrary, no form of variation need be expected. Some may produce heavier crops, or stronger plants, than others, but assuming all to be carefully and evenly selected from any crop or stock which is free from disease, and the tubers are stored during the winter in suitable conditions, and kept from frost or other harm, then if they are planted and treated similarly throughout there is little chance of any variation.

Too much care can hardly be bestowed on the seed tubers. If these are of home growth, they should be selected from the ground immediately after digging; they should be of clean skin, good form, free from disease, even in size, and weighing from 3 oz. to 4 oz. each. Such tubers, whilst most economical, will give the finest crops under the system of culture now practised. It is a good plan to store seed tubers in shallow deal boxes, 5 inches deep, 12 inches wide, and 14 inches long. These may be made with ends of $\frac{3}{4}$-inch deal, and sides and bottom of $\frac{1}{2}$-inch deal. An inch wide deal handle should be placed in the centre of each end, in order that the boxes may be moved about easily. They can be stacked one on the other in case of emergency, and in them the seed tubers can be carried to the ground for planting, thus making it unnecessary to transfer them into baskets.

Potato tubers are naturally tender, and will suffer greatly if exposed to frost. When kept in any store during the winter they should be fully exposed to the light and air in open weather, but during severe frosts the sets should be covered with some protective material. Too much care cannot be

shown in that respect, except that the store must not be heated, as if both covered up and warm, premature growth would result. The special object should be to have the store both light and of a cool temperature, so as to keep the tubers resting until the spring; then, if bud growth takes place, the shoots will be stout, sturdy, and of the most desirable description. Should any fail to sprout properly, they must be rejected; and any that are not true to name can be easily discerned. Seed tubers keep best in a store that has a floor consisting of the natural ground, as in such case the atmosphere is humid rather than dry.

CULTIVATION

Whilst it may be needful for very early crops of Potatoes to have the soil somewhat enriched with manure to promote rapid growth, it is undesirable to have fresh manure added for the mid-season and main crops of tubers, assuming the soil has been manured for the preceding crop. If the soil is too rich it tends to the production of coarse, sappy stem and leaf growth, and that is not unfrequently obtained at the expense of tubers. Even if the crop of tubers is heavy in such cases, many of the tubers are likely to be extra large and coarse, and these are not of the best type for consumption, being much more watery than those grown on soil of medium richness. If the soil is very poor, a dressing of animal manure should be dug in deeply several weeks before planting, that the soil may absorb some of its coarser properties before the Potato roots reach it. Whether Potato ground is manured or not, it must be deeply worked, for unless this is done, even with the addition of manure, the roots being unable to go deep out of the reach of

drought are greatly checked, and the plants suffer in consequence. Where the trenching of ground is not practicable, at least it should be dug fully 12 inches in depth to secure a good rooting medium.

The planting of first early varieties on a south border, or other warm position, may be commenced early in February, planting the tubers in rows, 20 inches apart. The tubers should be placed 12 inches apart in the drills, and 6 inches deep. If a liberal dressing of wood ashes, gypsum, bone flour, and soot be strewn along the furrows, and the tubers afterwards covered with soil, the growth will be rapid and robust. It is necessary to provide some means of protection from frosts, as the shoots will be through the ground whilst spring frosts are still prevalent. That can easily be furnished with the aid of some rough framework, across which rods or strips of wood can be laid, and on those some stout mats spread at night.

The section known as Mid-season, or garden Potatoes, should be planted in rows from 24 to 30 inches apart, and the tubers should be placed from 12 inches to 15 inches apart in the rows. The first week in April is quite early enough to plant these, as even then the tops will be through the ground before frosts have ceased. The late or main crop varieties, and all strong growers, need spaces of from 30 inches to 36 inches between the rows, and from 15 inches to 18 inches between the tubers in the row. These varieties, even at such liberal distances, will quite cover the ground as the season advances. The provision of ample room to ensure the full exposure of the leafage to light and air whilst effecting a saving in seed tubers, ensures an abundant crop of superior table quality.

It is important to remember that Potato sets properly sprouted in the store and in boxes, as advised, have from fifteen to twenty days' start in growth over sets not so sprouted. They have also the advantage of sending up just two or three stout stems only, because these check growth from other eyes, whereas when sets are not so sprouted, and several eyes or buds start growth all at once, a dense cluster of stems is produced, which is undesirable. If properly sprouted tubers are employed, the main crop varieties need not be planted until the end of April, or even early in May, when, the soil being warmer, better results may be expected.

As to nature of soil for Potatoes, it is useless to suggest one kind as being better than another, because tubers have to be grown in all sorts of situations and on all descriptions of soils. Deep working and good cultivation, the adding of plenty of manure for previous crops, and, in the case of clay or peaty soils, adding fresh kiln lime freely and in good time, suffice to render almost any soil capable of producing abundant crops.

SUMMER CULTURE

So soon as the tops are well through the ground, the hoe should be used freely between the rows, thus working the soil into a highly pulverised state and preventing the growth of weeds. In fields or on large breadths, the moulding or earthing-up is usually done with the aid of the moulding plough, but in gardens the draw hoe is the best instrument for that purpose. When flat hoeing has been done already the moulding-up process is easy, and should be carried out before the tops have made much growth. One good earthing-up, drawing the loose soil close to the stems, is sufficient.

After the moulding-up has been done the plant stems have some support against rough winds, and the newly forming tubers some protection from the drip from the leafage, which, in July and August, may be charged with minute fungus spores that in other circumstances would more easily penetrate and affect the tubers with disease. When once moulding-up is complete weeds seldom give much trouble, especially as the Potato haulm soon covers the soil. Even in the work of lifting the crop, whether this is done by horse-power or with a fork, the ridges of soil formed by the moulding are very helpful as an indication where to find the roots.

VARIETIES OF POTATOES

Varieties of Potatoes are very numerous, and as new ones are introduced yearly, many old ones disappear entirely. A selection of one year may be scarcely recommendable a few years later. The old distinctions of Kidney and Round tubers are now less marked than was formerly the case, as so many varieties produce tubers of both forms. The best distinction is found in the terms "White" and "Coloured." A few good popular first early varieties are May Queen, Midlothian Early, Sir John Llewelyn, Ringleader, Ashleaf, and Express. Good second earlies are British Queen, Snowball, Royal Kidney, Supreme, Early Regent, and Epicure; and of tall or main-crop varieties, Up-to-Date, Factor, Duchess of Cornwall, Superlative, Dalmeny Beauty, Warrior, Talisman, The Provost, and White City are the best white varieties. A few good coloured potatoes are Beauty of Hebron, Crimson Beauty, Eightyfold, The Dean, Queen of the Veldt, King Edward VII., Reading Russet, Waverley, and Cardinal.

LIFTING AND STORING TUBERS

Whilst first and second early Potatoes are usually lifted as fast as they are needed for consumption, whether mature or not, it should be the care of the grower, if it is purposed to save some tubers for future planting, to do this as the lifting proceeds, selecting the most suitable, and storing them as previously advised. It is found that in warm, dry seasons immature or unripe tubers should be kept for planting, as they make better growth and yield heavier crops than those which are allowed to ripen perfectly. With respect to the time for lifting the late varieties to be stored for winter use, it is best to select dry weather, and generally also to wait until the leafage on the plant stems has quite dried away, especially if the plants have been attacked by the Potato fungus. If lifting for storing is done whilst actual disease spores are on the plants, these may alight on the tubers and cause decay in the store. As a rule, a liberal dusting of finely ground lime upon stored Potatoes is conducive to dryness and good keeping. Great care should be exercised in getting up the tubers, as many of them are liable to injury from the forks if these are used carelessly. The soil in front of the worker should be levelled as the lifting proceeds, so that when each root is lifted it will be thrown on to a flat surface, and thus all the tubers are freely exposed. After allowing them to be exposed to the air for a time to dry, the diseased tubers should be collected and destroyed, then the required sets for future planting, afterwards the tubers suitable for cooking, and finally all the small tubers, which should be gathered and boiled for feeding poultry or pigs. Where there have been diseased plants

or tubers, a dressing of gas lime at the rate of half a bushel per rod should be applied to the ground, and allowed to lie there for a few weeks, then be dug in, as that may do much to destroy resting spores.

Where Potatoes are grown in large quantities, it is often necessary to store them in pits or clamps for a few months. The clamps should be made on a very dry position and be well drained. But the average grower stores his tubers in sheds, outhouses, or cellars, placing them in heaps or in such receptacles as boxes or tubs. However the tubers are put together, the dustings of lime should not be omitted. For a month at least, whilst a covering is necessary to exclude light and air, this should be of a temporary nature, to enable the stocks to be picked over carefully, before covering them up securely for the winter. The permanent protection should be dense enough to exclude severe frosts.

RADISH (*Raphanus sativus*)

The original Radish was a native of Java. Radishes are eaten as cool, raw salading, separately, or in salad mixtures, and if the roots are young, fresh, crisp, and juicy they are greatly appreciated. Very early sowings of Early Frame or Wood's Frame (with long roots), or French Breakfast, or Early Rose (round roots), sown thickly on fine soil over a hotbed, will furnish good roots in March and April. Later sowings of these varieties may be made on beds or warm borders, or where a good layer of warm manure has been just buried in the soil. The soil should be made firm and the seeds should be sown thickly, covering them thinly with soil; then the beds should be covered with straw litter. It is the common rule to sow Radish seed broadcast, as

the plants can stand closely together, and growth must be quick to ensure that the roots are soft, crisp, and edible.

There are numerous varieties of the round or oval-shaped section, and whilst those already named are of the best for first early sowings, the older red and white turnip-rooted varieties are most in favour for later crops. To have a good supply, seed should be sown on well-manured ground every alternate week up to the month of September, special care being taken to shelter the seeds from birds or hot sunshine, by the aid of straw litter spread thinly till growth has been made, or with fish netting laid double over the beds, but slightly elevated above the ground on thin sprays or branches. Radishes need frequent waterings, but not of liquid manure, as that would make the roots distasteful. Of the summer Radishes, with long tapering roots, there are but few varieties, the best known being the Long White and Long Red. These have roots about 5 inches in length when fully grown. As a winter salad, the old Black Spanish Radish used to be much favoured. That has been displaced by the long rose-coloured Chinese variety, which has mild, crisp flesh and a more pleasing appearance than the Spanish. Both these winter Radishes should be sown from the middle of July to early August, in drills 12 inches apart. When fully grown, the roots may be carefully lifted early in winter and stored in dry soil, in a cool cellar or shed, for use as desired. After peeling, they are cut into fine slices and eaten in mixed salads. The earliest supplies of the French Breakfast Radish, with its pretty white points, come from France and the Channel Islands. Soon afterwards larger supplies are furnished by our own market growers, and later the public requirements appear to be liberally met.

GARDEN TURNIP (*Brassica Napus*)

The term Garden Turnip is the best to apply to these ancient and invaluable members of the Cabbage family. It separates them from the larger, coarser growing varieties, commonly grown in fields as food for cattle. Those varieties which have medium tops or leaves, and roots that come very quickly to perfection, are much the best for ordinary consumption. The flesh of Turnips, if watery, is at least sweet, soft, and pleasantly flavoured, and, when well cooked, Turnips form a cool and pleasant food. It is comparatively easy to obtain a supply of Turnips over a long season, thanks to the numerous varieties now in commerce, especially if small sowings are made at frequent intervals. Even in February, a sowing of the tapering Jersey Navet or the flattish round Extra Early Milan may be made in shallow drills drawn at 9 inches apart on a warm border, as comparatively small roots only are desired at that season. These early sowings, if protected with raised coverings at night, such as were recommended on a previous page for Carrots, will grow quickly. If a bed of warm manure and leaves can be made up, and this covered with a rough frame, so much the better. The hotbed should be covered and the Turnip seed should be sown thinly, selecting a very early maturing variety. But once these small sowings have commenced, others of the same variety should be made at intervals of about three weeks all through the spring and summer, larger sowings following in August, when provision must be made for a winter supply. By that time vacant ground which has produced crops of Early Peas, Potatoes, Beans, or other vegetables will be available, and, without adding manure,

but simply pointing over the surface with a fork 6 inches deep, the soil can be made in excellent condition to receive the Turnip seed. Sowings should be made, in the first and third weeks of August, of the well-known Early Snowball or White Model, in rows 12 inches apart, and also, during the third week, one of Green or Purple-top Globe to constitute a late winter crop, as both those varieties are hardier than the pure White Snowball; but if Turnips are wanted for exhibition, none is better or more handsome than a good stock of the latter variety.

Being naturally a hardy, cool-loving plant, the Turnip thrives better in the autumn than during hot weather, and is less liable to become over-mature and woody. For that reason, soil for late, or winter crops, need not be specially enriched, but for spring and summer sowings, liberal manurings are essential. In the northern counties a very popular garden Turnip is the Golden Ball or Orange Jelly. This is a yellow-fleshed counterpart of the Snowball, and, when cooked, its flesh has not only more flavour, but has a more solid or marrowy texture. In the south there seems to be some prejudice against the yellow colour, but when that is overcome the variety is greatly liked. Whilst plants from very early or summer sowings may be left in the rows from 4 to 6 inches apart, those intended to form the winter main crop should be thinned to 6 or even 9 inches apart in the rows. When the weather in autumn is open, and earlier sowings have partially failed, sowings of Snowball may be made up to the middle of September. Even if these late plants fail to develop their roots well, the plants, if left rather thickly together, will produce a fine crop of tops in the spring. In making sowings in hot, dry

PLATE VII.

TURNIPS.

Red Globe.

Green Globe.

Golden Ball.

Yellow Perfection.

weather, it is necessary, after drawing the drills, to well soak them with water, then the moment that has soaked in, to sow the seeds, covering them thinly with fine dry soil. Growth will commence after a few days, and then it is desirable to dust the seedlings heavily with fine soot, dust, or wood ashes. The short grass mown from lawns, cast thinly along over the drills, helps to shade the seedlings from hot sunshine, and wards off that destructive insect, the Turnip Fly. The dustings should be repeated frequently if these insect pests abound. It is desirable to pull and store some roots in soil or ashes when hard weather is imminent. They can be laid in thickly in soil beneath trees, and sheltered with a covering of litter or fern fronds, or they can be stacked in dry soil in beds or stores. Where it is desired to give to young Turnips some stimulus, a liberal dressing of native guano greatly assists growth, if dusted along the drills when the seed is sown. Finely crushed sulphate of ammonia, nitrate of soda, or guano strewn beside the rows, at the rate of 3 lbs. per rod, and hoed in after growth has begun, also helps the plants to develop the roots rapidly. The quicker the growth, the sweeter and crisper the roots. Apart from the ordinary use of Turnips as a table vegetable, they are acceptable also for flavouring stews and soups.

SWEDE TURNIP (*Brassica Rapa*)

Some leading seedsmen have successfully made selections from the well-known yellow-fleshed Swede Turnip of the field, suitable for garden culture. Varieties with yellow flesh and white flesh, moderate in growth, are

now obtainable. These roots are much hardier than the white or yellow garden Turnips; hence a few rows in a garden may be found of special service in hard weather. Seeds of these varieties may be sown in June and July for succession, in drills 18 inches apart, on good, well-worked ground. To furnish a little protection, soil may be drawn up round the roots in November. When peeled and cooked, the flesh is of a soft, marrowy texture, and distinct and pleasant flavour, which many persons greatly like. Spare roots put close together in a bed of soil in a frame will furnish plenty of young shoots in the early spring, and these form an acceptable vegetable.

Holders of small farms, who cultivate their lands by gardening methods, are recommended to raise a breadth of a good variety of Swede each year. Apart from the value of the roots for the table, and the sprouts they are capable of producing in spring, any roots which are left growing all winter will make excellent food, either in a raw or cooked condition, for cattle, poultry, and pigs. There need be no waste of any kind in such a crop.

CHAPTER IV

BLANCHED-STEM VEGETABLES

ASPARAGUS (*Asparagus officinalis*)

THE Asparagus is a native plant on the sea-coasts of Britain, and therefore perfectly hardy. The portion used as a vegetable is furnished by the young stems, which in spring are produced in considerable numbers by strong, well-established roots. The stems are ready for cutting very soon after the points can be seen above the ground. The roots have generally over them a covering of well-pulverised soil, some 5 or 6 inches deep, therefore, when the tips are from 1 inch to 2 inches through the ground, they can be cut in lengths of from 6 to 9 inches, varying a little according to the thickness of the soil. Asparagus is held to be one of the most delicious of all vegetables. The plants can be raised easily from seeds, which are produced in great profusion by well-established plants. The small red berries appear in autumn after the summer growths have set their small, white flowers, but it is not desirable to save seed from plants that have yielded a big crop of berries, as the seedlings from these might be weakly, but, on the contrary, they should be selected from robust plants that are less heavily laden with fruit. These fruiting stems should not be cut until they turn brown, thus showing signs of maturing;

then they should be cut and laid out on a sheet of paper in a very dry place. After a few weeks the berries may be rubbed off and put into a pan or box containing a quantity of clean, white sand. During the winter the pulp will decay, when the whole may be rubbed through a sieve, well dried, and rubbed quite fine. The seeds may be sown at the end of March or early in April, in shallow drills in the open ground, choosing deeply worked and well manured light soil. The drills should be from 12 inches to 15 inches apart, and the seed should be strewn in thinly, covering it immediately afterwards with fine soil. It is desirable to allow the plants to attain to a height of from 3 inches to 4 inches, then to thin them out to 6 inches apart, sparing those plants which show most robustness. During the season it is only necessary to keep the hoe freely used between the rows, and, if dry weather prevails, a couple of light sprinklings of coarse salt or nitrate of soda may be given in July and August, and be well hoed in. Asparagus, being naturally a seaside plant, is benefited by moderate dressings of salt. Where ground can be freely spared, and the seedling plants have grown strong and have developed stout roots, they may be planted in the permanent beds in November. If ground cannot be spared at the time, a dressing of well-decayed manure may be applied between the rows of seedlings, to help them to grow even still stronger the following year.

Before they are permanently planted, the soil should be trenched from 2½ to 3 feet in depth, and have a heavy dressing of half-decayed stable manure worked into it. This work should be done at the least a few weeks before planting is commenced. Prior to the planting, a dressing of bone-dust, Kainit and soot, at the rate of 6 lbs. per rod area.

should be strewn over the breadths or beds, and, if possible, a liberal quantity of wood ashes; this dressing should be forked in several inches deep. If the breadth is on the flat, as is now frequently seen, furrows 4 inches deep should be thrown out with a spade, so as to be broad and flat; if, however, it is a little raised in the centre of the furrow, so much the better. The roots should be planted in these furrows at from 15 to 18 inches apart, the furrows being from 24 inches to 30 inches apart. By giving so much room, the plants benefit a few years later, when strong growths are made. Too close planting leads to starving the plants, and therefore the breadth is less enduring.

GENERAL CULTIVATION

When once the plantations are made, the subsequent care of Asparagus is simple enough. Whatever the age or strength of the roots when planted, no tops should be cut for food the first season afterwards, and the plants may be spared in the second season unless they are exceptionally strong. If any are cut, then the gathering should be limited to one month only. In the following year the cutting may be extended to six weeks, and later, if so desired, for even longer. But it should be understood that excessively hard cuttings cause weakness of growth. All shoots, whether stout or small, should be cut so long as the cutting proceeds. When it ceases, all the shoots should be allowed to grow; but if the tops become numerous and dense, some of the weaker ones may then be removed by judicious thinning. During the summer two very light sprinklings of coarse salt, or sulphate of ammonia, may be applied and be lightly hoed in, taking care, however, not to injure the plant

stems. Weeds must be rigidly suppressed at all times. The growths or tops above ground die away late in autumn, but they should be allowed to become fully dry before they are cut off and removed. This work should be done carefully, to prevent seed berries from falling about on the ground, as these would grow unless removed afterwards. If the site is much exposed to wind, it is necessary to give the growths some protection in the summer by fixing pea-sticks or stakes with stout string round the plants to support them. When the ripe tops have been removed, the beds may be given a top-dressing of well-decayed farm-yard manure, as the fertile properties of the manure will be washed in during the winter. Where the rows of plants are wide apart the dressing may be very lightly forked in, so as to cover it with soil. If closer together on beds, then it is best to shovel some loose soil from the alleys and cast over the manure, as the ground then wears a neater appearance than would be the case if the manure were left exposed.

At the end of March it is well to run a coarse rake over the surface of the beds, drawing off any long or coarse matter, thus leaving a fine smooth surface for the points of the young shoots to come through, that they may be seen easily. Cutting is best done with the aid of an Asparagus knife, specially devised and sold for the purpose, for by using this tool injury to successional stems is avoided. When only a few stems can be cut daily on small breadths, if these be stood with their bottom ends in water and in a cool place, they will keep quite fresh until enough has been cut to form an appreciable dish.

PLATE VIII.

CELERY.

RED.
Standard Bearer.

WHITE.
Grove White.

LEEK.
Prizetaker.

FORCING ASPARAGUS

This can only be done successfully when there are plenty of strong, old roots at disposal, therefore a new plantation should be made for this purpose every year. If forcing be once undertaken, not only should the supply of roots for that winter be sufficient, but a similar supply should be provided each year. To force Asparagus, it is essential, where there is no fire heat at disposal, to make up good manure hotbeds, put frames on them, and make up a bed of soil 4 inches deep. On that soil the Asparagus roots should be placed thickly, filling in about them with soil, and afterwards giving them a good watering, then putting on the lights and covering them densely with mats and straw litter, to both exclude light and cold air. Blanched stems will be ready to cut in a few weeks, and cuttings may be continued until all the crowns have produced stems. It is not desirable, unless there is a very large supply of roots, to have this forced crop too early, but rather let the forced supply lead up to the incoming of the outdoor crops. Where there are proper houses, sheds, or frames heated by hot-water pipes, the forcing can be done in the way described, except that the hot-water pipes will take the place of the dung-beds. With such appliances the forcing of early Asparagus is very simple, and if there is a sufficient stock of roots at hand it may be continued all through the winter.

CELERY (*Apium graveolens*)

This is a hardy plant, indigenous to Europe, and one of the oldest vegetables cultivated in gardens. Celery occupies

a high rank as an edible vegetable, although it is most commonly consumed uncooked as a salad, for which purpose its white, blanched, crisp stems fit it admirably. In an unblanched state Celery is inedible, being hard or woody in texture, and harsh or astringent to the taste; it is even useless when cooked, except to impart a special flavour. When the stems are well blanched, through the medium of soil moulding or other methods, the chlorophyll, or green colouring matter which is natural to the leaf stems, is expelled; hence what was previous to that process being adopted, a comparatively useless material, become singularly pleasant, crisp, and sweet, and in place of the astringent properties we get a sweet flavour peculiar to this plant.

It must not be overlooked, however, that blanched Celery, cooked as Seakale, affords a very delicious dish. Were it presented more frequently for consumption in that form, it would doubtless add largely to its popularity as an edible product. The portions of the stems unsuitable for a salad can be used to flavour soups and stews.

In order to ensure a plentiful supply of plants early in the season, sowings should be made, in shallow pans or boxes, on good soil early in March, and successive sowings in April, May, and June; to ensure a good stock of hardy plants for late use, a sowing of some red-coloured variety may be made in the open ground in May or early in June. If this late sowing be made on good soil and the plants kept shaded and watered, they will grow very quickly. From the earlier sowings, seedlings should be lifted when 2 inches in height, and be pricked out, at 2 inches apart, into shallow boxes or pans, keeping these in a very gentle warmth.

When 5 inches in height and well rooted, the plants should be again transplanted into good soil, raised to within 6 inches of the glass in a cold frame, placing the plants at 4 inches apart. They should be well watered and shaded when necessary. After a few weeks growth is rapid, and very strong plants 9 inches in height, and having large balls of root and soil attached, will be ready by the middle of May for planting in the trenches, provided they are first thoroughly hardened off. But where specially early Celery is needed for exhibition in August, a few dozen plants from a sowing made early in March may be pricked out singly into 3-inch pots, and from these, when well rooted, be transferred to 5-inch or 6-inch pots, using for the purpose a good loamy compost, of which one-fourth should be manure from a spent hotbed. From these pots the plants may be turned out into a shallow trench, previously prepared, and in a fairly sheltered position, putting them from 12 to 15 inches apart in the rows. If frosts still prevail it will be well to provide some temporary protection, with the aid of a few wooden strips or poles and mats laid over them.

As regards the latest plants in the open-air seed-beds, these should be lifted and pricked out as soon as they are strong enough to be handled. For such purpose a small space of ground will suffice, if a good layer of old hotbed manure be shallowly forked into the soil and neatly levelled. In such a nursery bed the seedlings may be dibbled out 3 inches apart each way and well firmed, then watered, and for a few days shaded from bright sunshine. After a month has elapsed, such prepared plants can be lifted and replanted in the trenches without suffering any

check, provided a good watering is given them and they are lightly shaded during sunshine.

Trenches for Celery should not be deep, for the best soil is that on the surface. Where, however, circumstances compel the distance between the rows to be limited to 4 feet, trenches may be made deeper if they are prepared with care. To that end, when duly marked out, these should be made 12 inches wide and 12 inches deep, the top spit being thrown out to one side. The next 12 inches of subsoil should be thrown out on the other side, the first or top spit being returned to the trench, a heavy dressing of half-decayed animal manure added, a portion of each side of the trench thrown in on to that, then the whole well mixed with a fork. The plants should be planted down the centre of each trench, from 10 inches to 12 inches apart, and be firmly fixed by the planter's feet as the work proceeds. Where ample space admits of the rows being made wider apart, trenches but 4 inches deep may be thrown out, and a liberal quantity of manure well mixed with the soil, after which the planting may be done as already advised. Some little trouble taken by transferring the seedlings from the seed pans or beds to other pans or boxes, or into a frame or nursery bed, is well repaid in the rapid growth and general excellence of the Celery; but, in addition, the habit of bolting to flower prematurely is thus overcome.

The illustrations depict red and green varieties.

BLANCHING OF CELERY

The process of blanching Celery stems is generally carried out with the aid of soil, but when specially fine,

clean Celery is desired for exhibition, then blanching is done with paper bands. A special advantage of this latter method is that the adding of soil to the plants may be deferred, and, in consequence, feeding with liquid manure may be continued long after the blanching has commenced. When the growth is from 16 to 18 inches in height, the leaf stems may be gathered up close together and loosely tied towards the top. Any short stems or leaves that may have grown out from the base of the plants should be pulled away, then paper bands added. In some cases these are first of folded tissue-paper, 9 inches broad, wound two or three times round the lower parts of the stems. On this are added bands of equal width of stout brown paper, and when completed these are tied securely, but not too tightly, with raffia. As the stems swell in size, the bands become fully distended and light and air are excluded. Later, other bands are added, and by the time the Celery is needed for exhibition, stems to a height of 15 or 16 inches will be found to be perfectly blanched, not a stain or fracture being visible. Some soil may be placed about the plants, if desired, after growth has been made and the banding is completed.

Moulding-up with soil is a more laborious, but less artificial, process. This should, however, not be done until the plants have attained a considerable size, and then only in dry weather. Each plant should be gathered up in one hand by the operator, and any short leafage stripped off; then some light, well-pulverised soil may be forced in close to it with a fork and to a height of 6 inches. That quantity suffices for a fortnight, and is sufficient to keep the plants in an erect position. Later, the moulding may

be done by adding layers 2 or 3 inches in thickness, the greatest care being taken that none of it falls into the centre, or between the stems, of the plants. During this process it is well to give it a gentle pressure with the hand, as that excludes light and air, yet leaves the soil sufficiently loose to enable the stems to swell to the utmost. When the final moulding-up is completed, the soil being brought to a sharp ridge close under the leafage, the sides of the ridges should be made firm with the back of a spade, so that they will throw off rain.

Celery, however grown or blanched, is not so absolutely hardy but that it sometimes suffers in severe weather. For that reason it is well to have at hand plenty of dry straw litter, or fern fronds, to place over the ridges; or, better still, have hurdles thatched with straw placed along each side of the ridges, their tops meeting over the plants.

Varieties to Grow.—For cultivation in small gardens excellent varieties are White Gem, Dwarf White Incomparable, and Dwarf Red. Of stronger growers, Solid White, Ivory White, Standard Bearer, and Leicester Red, are some of the best.

CHICORY (*Cichorium Intybus*)

Although the Chicory plant produces a long, tapering root, it is not edible in the same sense as those mentioned previously, and the root is not the portion generally consumed—except for flavouring coffee. But the culture is relatively the same. Chicory is a native plant, but the variety most grown in gardens is that known as Witloof, an importation from the Continent, having both larger roots and leaves than the native species. Very much the

same treatment is needed by this Chicory as is described for Salsify. The seed is sown in both April and May to provide succession. When fully grown early in the winter, the roots are lifted and trimmed of their leaves. They are then placed close together in soil in a warm, dark place, where they soon produce blanched heads 6 to 8 inches in height, which form excellent salading. The blanched heads, cooked like Seakale, also form a first-rate vegetable. The seed drills may be 12 inches apart, the seedling plants later being thinned to from 7 to 9 inches apart. The roots are fairly hardy, especially if slightly moulded-up in the winter, and in hard weather protected with litter or ferns, that they may be lifted when needed.

DANDELION (*Taraxacum officinale*)

The common Dandelion, one of the most troublesome of weeds, produces leaves and roots much resembling those of the Chicory, and needs the same cultural treatment. On no account must plants in gardens be allowed to flower and develop seed, or they will cause considerable trouble. Being thinned out in the rows to 6 inches apart, every encouragement must be given the plants to produce strong leaves, as root development is then proportionately good. Although the leaves are bitter in a green state, when blanched, they make admirable salading. During the growing period the hoe must be used freely between the rows, not only to prevent weeds, but also to ensure the production of a loose mulch of surface soil. In all other respects the plants should be treated as advised for Chicory, forcing the roots in winter in such conditions as will produce blanched growths. The Dandelion is not exactly a "blanched-stem"

vegetable, as the edible portion consists mainly of blanched leaves.

SEAKALE (*Crambe maritima*)

There is probably no vegetable forced for producing blanched stems that merits higher appreciation than Seakale. It is a native of Britain, on various parts of the seacoast, and is essentially a salt-loving plant. But it does not follow that, because the plant is found wild on the seacoast, it fails to thrive well in inland localities; indeed, it is singularly responsive to good culture in any part of the kingdom, and is very widely cultivated. Whilst absolutely hardy, yet under present-day cultural conditions it gets little exposure to severe weather. The great value of Seakale lies in the fact that it yields its food supplies through the winter and spring months, and, where an ample stock of roots has been raised, it is possible to have forced stems for consumption for a period extending from November till April, a period when products of the succulent nature of blanched Seakale are scarce. So wide is Seakale grown as a market product that many acres of ground are devoted to the raising of roots each year, and the cultivation of these furnishes considerable employment. Seakale is a perennial plant, but it invariably flowers and bears seed in the second year from seed, therefore seed is easily obtainable at a moderate outlay. A first stock of roots can be raised by sowing the seeds early in the month of April. Land intended for Seakale should be dug deeply and manured heavily, as the plant is a gross feeder. If the work is done during the winter and the surface of the soil has become beaten it will be well to have it forked over a few inches

deep before drawing the drills; but if the soil is still loose, the drills may be drawn without taking so much trouble. These drills should be about 3 inches deep, as for Peas, and 20 inches apart. The seed is chiefly found in shells, and as a result germination is rather slow, but it is sure. It is desirable to sow thinly, or otherwise there will be waste when the seedlings come through the soil, for they must be thinned out to 20 inches apart in the rows. Beyond keeping the soil well hoed and free from weeds, little else is necessary during the summer. By the autumn the strong leafage will have covered the ground, and, just in proportion to its strength, so will be the dimensions of the roots and crowns, after the leafage has disappeared late in autumn.

The lifting of the roots should be done with care, and to that end it is well to open a trench, 2 feet wide and 15 inches deep, at one end of the breadth, forking the roots out as the trenching proceeds, to ensure that none is broken or left in the ground. When a quantity has thus been lifted, they should be trimmed of all side roots, these portions being, as fast as severed, all laid one way. The main roots may be cut to about 7 inches in length, all other portions being laid aside to be made into root cuttings. The main stems, having stout dormant crowns, can be laid in thickly in loose soil beneath a wall, fence, or hedge, placing the crowns upwards and just covering them with soil. From such positions crowns can be taken as they are required and put into a warm, dark place, where they will produce blanched stems for cooking, the whole collection being utilised in this manner during the winter.

In the meantime, the root-trimmings should be made into cuttings, using the stoutest and straightest portions, and

making them about 5 inches in length. The top portions, always those parts which were nearest the main stems, should be cut across quite evenly, and flatwise, the lower portions, or bottoms of the cuttings, being slightly bevelled or pointed, thus enabling the tops and bottoms to be easily determined. These root-cuttings, all laid one way, may be set thickly together in a trench, in a somewhat sheltered place, such as a position beneath trees, or a hedge; the trench should be cut straight down with an erect spade, and made 6 inches deep. In this trench they may be placed upright and thickly together, soil being placed against them, and slightly covering the tops. At the end of March the cuttings should be planted out, in good ground, and they will produce even better roots and crowns than can be obtained from sowing seed. Once a stock of roots is thus produced, propagation by the same method may be practised yearly for a long period. The best time for planting is the end of March or early in April, it being undesirable to have the small shoots or crowns which break out from the tops of the cuttings exposed to late frosts. The ground should be well prepared for these cuttings as for the seed stock, but in the case of cuttings the rows should be 24 inches apart, the distance apart in the rows being 12 inches, this being none too much when the leaf growth is strong, as it is in autumn. The tops of the cuttings, when dropped into the holes made by the dibber, should be covered about half an inch deep. The cuttings, having callused over before planting, will soon form crowns and roots, and, when the tiny leaves are seen, it is needful to have every plant examined and all superfluous crowns removed with a sharp knife, leaving one only to each cutting. As leaf growth increases, a thin dress-

ing of finely crushed sulphate of ammonia, or salt, may be strewn between the rows and be well hoed in; a second dressing may be given a month later. Little else can be done to assist growth, other that keeping down weeds.

The winter treatment advised for seed-raised plants applies equally to crowns raised from cuttings, and the treatment of these and the cuttings is the same. In some cases a few rows of roots are left in the ground all the winter, and these should be covered, just as growth is beginning, with a ridge of fine, loose soil, 9 inches deep, and thus a specially late cutting of blanched heads can be obtained from the open ground. If these roots have their heads cut off close to the ground, they will form very fine crowns for blanching again in the following year.

The old plan of putting Seakale roots in clumps of three, in order to cover them in winter with large pots, and a mass of long manure and leaves to exclude light and air, and to impart some warmth, is now seldom practised in good gardens, the annual lifting and propagation of a fresh batch each year by root cuttings being most satisfactory.

The forcing and blanching of the heads is generally done in dark pits, heated by hot water and covered thickly to exclude light, as is seen in market gardens, or in close, dark, lean-to sheds at the back of a range of heated greenhouses, as is common in first-class private gardens. In these sheds, warmed by hot-water pipes, forcing and blanching can proceed all the winter. A few dozen roots planted thickly in soil and kept quite dark soon produce white heads, and if there is a succession planted every two or three weeks, delicate blanched heads can be had in abundance. Blanching, if less rapid, may at least be done in cellars, or in boxes

partly filled with soil and placed in stables or sheds, without heat, but these boxes must be well covered.

In addition to the old Purple-tipped Seakale, there is a variety known as Lily White, and in this there is no purple tinge.

LEEK (*Allium Porrum*)

This vegetable enjoys the distinction of being the only one which figures as a national emblem.

Whilst Wales enjoys the emblem—and Leeks are commonly cultivated in cottage gardens in the Principality—Leeks are quite as popular, as a vegetable, in Scotland. The very best culture is needed to obtain fine, clean, well-blanched examples; indeed, few products are more difficult to secure in perfect condition than are good, white Leeks.

Although a plant mentioned in ancient history, and doubtless cultivated by civilised nations from time immemorial, yet the production of such superb stems or plants as are now seen at exhibitions is a comparatively modern culture. It may, however, be assumed that the culture seen in some market fields, and too commonly in gardens, may differ little from what was the rule hundreds of years ago. It is, for instance, difficult to conceive any more crude practice than the putting out of plants with a dibber deep into holes in the soil, thus leaving such portions of the stems as may in this manner be buried to become blanched as best it may. Even if our ancestors were content to consume Leeks absolutely unblanched, their culture could hardly have been less intelligent.

Well-blanched Leek stems, when properly served, are soft, succulent, mild, and pleasant in flavour, but unfortu-

nately, as a cooked food, the Leek is too little known or appreciated.

There are few varieties of the Leek, and the best known are International, Prizetaker, and Lyon, but the distinctions are very slight. The difference in the plants depends more on culture than on name, for each variety is capable of producing perfect and beautiful stems. When perfectly blanched, these are white for a length of from 12 to 14 inches; the stems are equal in thickness throughout, having no broad or bulb-like bases, and they should be, from bottom to top, about 3 inches in circumference. Extra large stems, if perfectly presented, may command more points in a competition, but for domestic purposes stems an inch in diameter are most appreciated.

The seed is generally sown in the months of March and April in the open ground, simultaneously with the spring sowing of Onions. That method may satisfy ordinary requirements, in cases where stems are not wanted until winter, and then only stems of moderate size. The seeds germinate freely and growth is fairly strong, but it is relatively slow. If stems are wanted for exhibiting or for domestic use in autumn, it is desirable to sow seed thinly in a well-drained, shallow pan or box filled with sifted soil. The seeds may be pressed into the soil, then be very thinly covered with a sandy compost, watered, and stood in a frame or greenhouse. Such a sowing may be made early in March. Where there is neither frame nor greenhouse, the pan or box may be put into a larger and deeper box, be stood in a warm position out-of-doors, and covered close with a large pane of glass. That, again, should be covered with some bagging at night. In this simple way, plants

can be obtained much earlier than from any early sowing in the open ground. In the former case, so soon as the plants are 4 inches in height, they should be dibbled out 2 inches apart into shallow boxes filled with good soil, and still grown on under glass for a week or two; then they can be stood in a sheltered position out-of-doors to increase in size, and to harden. Whilst in these boxes, watering twice weekly with weak liquid manure will greatly assist growth.

To obtain extra fine stems, it is well to prepare trenches as for Celery, 3 feet apart, putting out the plants into these in single rows, 12 inches apart, well firming the roots and partially burying the stems; the planting should be done with the aid of a garden trowel. If dry weather prevails, occasional waterings must be given, and, as growth proceeds, the lower leaves removed, this latter practice being followed as moulding-up increases. But if the moulding-up be done with the surrounding soil, as is the case with Celery, the opportunity to give good waterings, especially of weak liquid manure, is lost. To enable those aids to be given, the best way is to fit stout boards, 6 to 7 inches broad, on edge, on each side of the plants, and 6 inches apart, keeping them in position by the aid of cross strips of wood. The ends should also be closed, if the ends of rows. Into these wood troughs finely sifted soil or clean sand may be put gradually, and when the first trough is filled, the soil or sand being well pressed down to exclude air, a second trough of the same depth and width may be stood on the first, and that in time filled also. When this practice is adopted, and time has been allowed to enable the stems to become white, long and perfect specimens are obtainable,

because all this time liquid manure can be given to the roots from both sides, thus greatly promoting growth. If this modern practice is not adopted, then such plants put out into trenches simply need to be treated as the Celery. If there is evidence of grub, slugs, or ground vermin, the soil should be given liberal dustings of lime, and the lime should be well mixed with it before it is placed against the plants.

Few blanched stems are more liable to discoloration from injury than are those of Leeks, but none should ever be saved for exhibition that is not perfectly straight, even in size, pure white, and devoid of blemish. When lifted, trimmed, cleansed, and dried with a soft cloth, each stem should be wrapped singly in tissue-paper, which will keep it from injury.

Seedlings raised in the open ground should be transplanted direct from the seed drills or bed into trenches, being dibbled into the soil with great care so that the roots will go straight down. They should not be pulled up, but be eased from the drills or bed with a fork, thus enabling the roots to be liberated without breaking them.

Many growers are content to allow their plants to remain where they are raised until they are 9 inches in height, then, having ground clear of other crops, to dibble them out into holes 6 inches deep and 12 inches apart each way. So planted, over 260 plants can be put out on a rod of ground. The roots are made firm, but the holes are not filled until growth has been made. By this treatment medium-sized stems, blanched from 5 to 6 inches up, can be cultivated. They are very hardy, and will give a supply from Christmas until April. If the alternate rows be lifted first, more soil

can be moulded-up to those which remain, thus furnishing further protection and blanching. Medium stems of this kind, when trimmed and well cooked, make a delicate dish, and are also acceptable for flavouring soups and stews.

Few plants are more liable to discoloration or abrasion, after being blanched, than the white, soft stems of Leeks. More than ordinary care must be exercised to prevent any such defects in specimens intended for exhibition. If heavy rains prevail just before the plants have to be lifted, it is wise to protect the plants either by using a layer of long straw, or fixing up above the leaves temporary roofs of thin boards, lest the wet soak in close to the stems and cause decay. It is not necessary to protect a long row of plants, but perhaps a few dozen will suffice for exhibition. The plants required for consumption will be moulded up with soil in the usual way. For special purposes, extra efforts must be made if success is to be obtained.

CHAPTER V

MUSHROOM CULTURE

MUSHROOM (*Agaricus campestris*)

THE Mushroom, being a fungus, is not a vegetable in the same sense as the others treated upon in this volume, therefore it is given a chapter to itself.

Whilst the best Mushrooms are always obtained from meadows or pastures, where they grow naturally under favourable climatic conditions, such crops are very uncertain; they depend so much upon moisture, warmth, and annual dressings of manure. Mushrooms can easily be grown in artificial conditions, provided there is a good supply of spawn-cake and fresh, sweet manure from stables. Beds of manure made up on broad shelves on the floors of specially heated, dark sheds, when properly made, spawned, soiled over, watered, and covered to maintain warmth and moisture, produce Mushrooms in great abundance. This method of culture can be practised with care all the year round, with the exception of a few summer months. It is the culture of this edible fungus in the open air in winter which is more difficult and needs the greater skill, yet in market gardens immense quantities are produced in this manner, and their culture seems to be very profitable. Spawn-cakes are prepared for sale by experts, and they can be purchased

by cake or by weight in any quantity, and at very moderate prices. Assuming that the cake is not more than a year old, it may be assumed to be fresh and good. If it is older, then it has lost part of its productive capacity; but manufacturers are very careful to distribute only first-class cake, and, as a rule, it may be relied upon. The cakes should be stored, directly after purchase, in a moderately dry and cool shed or store until they are required for use in the beds.

The manure used for furnishing bottom-heat should be that from horses only, and it is specially important that it should be obtained from horses in good health, for manure from sick animals is most harmful. As the collection of a sufficient quantity of manure for a bed may take some time, so fast as collected the longer straw should be shaken out and put aside to dry for later use. What is then left of the shorter material should be spread out thinly on the floor of an open shed or barn so that heat will not be generated. As fresh manure is gathered, that must be treated in the same manner, and, when enough to make up a bed, whether in a heated shed or outside, has been gathered, the whole material should be well damped with water, then be thrown into a heap, in which form it will soon generate heat. A long, pointed stick thrust into the heap, and occasionally drawn out, will enable the cultivator to test the warmth of the heap. So soon as it is warm, the manure should be turned over, working that on the outside to the centre, and if the droppings are getting dry they must be damped again. After a few days the heap will again need turning and damping, and when it has once more become warm it will be found to have a pleasant smell and a silk-like touch. It is

then quite fit to make up into a bed, as all danger from overheating is past. If the bed is made on a broad shelf or on the floor in a dark, heated shed, it should be fully 10 inches thick after being made solid. Prior to making the bed, not only should the shelf or floor be thoroughly cleansed, but it should be coated with hot lime-wash.

The manure will generate heat in the bed, and when it has risen as high as it will and has commenced to decline, the bed may be spawned. That is done by breaking the cakes into pieces about the size of a small hen's egg, and forcing them well into the manure, 8 inches apart, all over the bed, covering them with manure. A few days later the bed should be coated with soil, the best material for this purpose being fresh loam from an old pasture, rubbed through a coarse sieve. The covering should be from 1 inch to 2 inches in thickness, and, after it has been applied, it should be gently damped with tepid water, then patted down smoothly with the back of a spade. The beds should afterwards be covered thickly with the long straw of the litter previously referred to, in order to keep them equally moist. Properly formed beds containing good spawn, if occasionally moistened with tepid water, should produce Mushrooms in about six weeks, and continue to bear for a period of two months. In any well-appointed garden, fresh beds should be made up every month during the greater part of the year. Beds may be formed in any unheated shed, outhouse, or cellar, but in these places the beds need a greater depth of manure, and a much thicker coating of litter to protect them from cold air. The greater the quantity of manure employed, the more thoroughly it is prepared, and the better the bed is made and spawned,

the longer it will continue productive. In heated sheds, a gentle sprinkling of water over the floor and sides once a day is desirable to maintain humidity. Wood-lice are the most troublesome insect pests, and must be caught and destroyed.

Mushroom Culture Out-of-Doors.—The ordinary method of producing Mushrooms in market gardens is on ridge-shaped beds made up of well-prepared horse manure, as previously described. The ground must be perfectly dry, therefore a base of ashes or gravel is best. It is also necessary the site should be one that is not exposed to cold winds. Where manure is plentiful, as in the London market gardens, these ridge-shaped beds are often made as much as 20 or even 30 feet in length. They are 3 feet wide at the bottom, and they have somewhat rounded sides, but are brought to a ridge or point in the centre at a height of about 3 feet. They are built up solid, the manure being well trodden in the process of making the beds. When a bed is completed it is patted over with the spade, neatly finished off, then covered with mats and litter to assist the temperature to rise. After the heat has reached its maximum, this taking place in about one week, spawning may be carried out as previously advised. The bed may then be soiled over with fresh, sweet loam, damped, then neatly smoothed with the back of a spade. It is important that pasture soil of a rather tenacious nature be used for the surfacing, as not only is ordinary garden soil insufficiently adhesive, but it is sometimes full of weed seeds, and thus gives great trouble. The entire bed should be at once covered quite thickly with dry straw-litter, and it is well, especially if strong winds or heavy rains prevail, to throw Russian mats or sailcloths over the tops

of the beds, as these protect the beds and keep the straw covering from blowing off.

In extensive places where great quantities of Mushrooms are raised, fresh beds are made up from September until April each year. Mushroom beds occasionally need liberal waterings, and, if the liquid can be slightly warmed, so much the better; it should be applied when the beds are stripped for gathering the Mushrooms. The stems should not be cut; in this case the portion left generally rots and injures the living mycelium. It is best to give each Mushroom a gentle turn with the hand, and then the entire stem is drawn out, leaving no refuse behind. After gathering the crop and re-watering the beds, the covering should be replaced without unnecessary delay.

CHAPTER VI

PREPARATION OF VEGETABLES FOR EXHIBITION

WHILST the exhibition of vegetables at shows, whether in competition or otherwise, is far from being the primary reason for culture, yet it has the merit of inspiring in others the desire to produce the best examples for food, because it is only such specimens that secure honours at the best exhibitions.

ASPARAGUS

This is rarely employed as an exhibition vegetable, as it becomes out of season after midsummer. When it is so used, the stems should be selected carefully from a large number. The collection of these stems may be spread over a week, those to be saved for the final selection being stood upright in a dish containing water 2 inches deep, which should be kept in a cool, dry structure. On the day previous to the show the stems should be washed, then wiped with a soft cloth and laid out for selection, eventually tying them into bundles of from 36 to 50 stems, according to their size. The bottoms should be cut perfectly level, and when staged, be stood in a shallow punnet or dish, surrounded with a base of parsley. The stems should be blanched white with the exception of the tips, which should be of a pale-green tint and have the

scales on them quite closed. If the stems, when thus prepared, range from 7 inches to 8 inches long in the bundle, that is a very good length, and the thicker they are the better. At a spring show first-class Asparagus counts as a strong dish.

BEET

Long Beet should be about 12 inches in length from the neck to the point; the shoulders should be gently tapering, and rounded. The form should be broadest just under the shoulder, then gradually contract very evenly to the point or tip of the root. The skin should be smooth and free from side roots, swellings, or abrasions. The flesh should be of fine grain and deep even colour, as exhibition roots are often cut during the process of testing them. When several are shown in a dish, they should be as even in size as possible, and be all of the same variety.

Round Beet should be of the best globe or oval-shaped form; rather deeper than broad, very smooth, clean and handsome, and of good medium but even size. In this case also the flesh should be of a rich colour and fine texture.

CARROT

Carrots of the stump-rooted section should be bunched and tied round their tops. The roots should range from 6 inches to 7 inches in length; they should have very clear skins, be free from any eruption or side roots, and have their basal root points carefully preserved. Clearness, good colour, and handsome form are good points.

Intermediate or long Carrots may range from 12 to 14

inches in length, including the root-point. These should be of good medium size, not large, but of deep-red colour, handsomely tapering from the shoulder, very smooth, and devoid of all side growth. They should not be bunched, but be shown in a medium-sized pile of 10 roots, having a base of 4 roots, and finishing with one root. Such a mound of Carrots makes a strong feature in a collection.

MUSHROOM

Exhibitors are rather slow to include this edible fungus in collections, especially in the south, because many other good vegetables are available. There is no certainty that what looked to be a fresh, well-selected sample on the previous day may not, after packing and transit to a show, prove to be past its best. Mushrooms should be carefully selected for size, which should be medium ; the skins should be white and the tops rather rounded than flat, while the gills or undersides should be of a bright pink colour. Mushrooms are most useful for collections early in the year, for when June comes in vegetables of the finest exhibition qualities are abundant. They should be packed for transit in single layers in shallow boxes, and staged at the exhibition in shallow, blue-papered punnets, or arranged in a group on a carpet of fresh parsley.

ONION

Fairly good size should always mark Onions ; indeed, if the bulbs are solid, clean, and of handsome form their large size is a distinct advantage. A dozen fine bulbs weigh from 30 lbs. to 36 lbs., and all are so much alike that one can

hardly be distinguished from the other. The globular or deep oval bulbs weigh heaviest, and gain most points at the shows. The necks should be small and matured, the skins bright, clean, smooth, and free from discoloration or spot. At early summer shows, bulbs from an autumn sowing are usually presented in an immature state. These should have their outer skins removed, the roots shortened, and be shown on their sides. At later shows the more ripened bulbs should be shown standing upright as grown.

POTATO

Tubers intended for exhibition should be selected as the digging proceeds, then dried, have any soil on them gently rubbed off, and be at once rolled up in paper to exclude light and air, storing them in a dark, cool place. A day or two before the show each tuber should be washed in tepid water, using a soft brush and a little soap, and rinsing them in clear water, afterwards drying them with a soft cloth and enclosing them in fresh paper. It is best to make the final selection for show after the washing, as then all defects are seen. A dozen tubers should be of good size, have bright skins, free from all abrasions or eruptions. They should be laid out flat on moss; but if nine tubers or six tubers be shown, they look best on large plates, where, slightly heaped, the form of the tubers is best seen. If the tubers are exposed to the air for a few hours the skins are liable to get green and discoloured. In any collection of varieties a few coloured tubers should be included, to furnish distinctness as well as to improve the appearance.

PARSNIP

Parsnip roots are seldom shown at other than late autumn exhibitions, and, as a rule, six roots constitute a mound. The roots are often shown far too large and long; for table use they should be about 12 inches long, broadly shouldered, and tapering smoothly and handsomely to the root tip, therefore these should be considered best at exhibitions. Instead of this, roots 30 to 36 inches long are often shown, and a great portion of the roots is inedible. The whiter the skins and freer from side roots, the better. Parsnips form an effective dish in a collection from Michaelmas onwards.

RADISH

Radishes should be shown in neatly tied bunches, the roots, whether round or long, being even in size, alike in appearance, and so arranged in the bunch as to show each root to the best advantage. If coloured roots are shown, the colour should be bright and the flesh of the roots tender, crisp, and juicy.

ESCHALLOT

This bulb is commonly exhibited for prizes at shows, and it is generally arranged in dishes or plates containing 24 or 30 picked specimens of even size, as handsome as can be found, not too large, but having bright and glossy skins, and showing clearness and freshness. Sometimes they are exhibited in 3 or 6 clusters as grown.

SALSIFY, SCORZONERA, and HORSERADISH

These are not common exhibition roots. When they are so employed, they must be of fair size, even, clean, neatly arranged, free from all side roots, and neatly bunched; in numbers they may vary from 6 Horseradishes to 12 specimens of Salsify and Scorzonera.

TURNIP

Whether these be white or yellow, they should be of good medium size, young, very clean, and even. Generally it is best to stage them in the form of a tied bunch of 6 or 9, as, being round, they remain together better if thus tied by the leaf or stem. The upper portions of the leaves should be trimmed off neatly. In the southern counties, including London, the pure white round and handsome Snowball finds most favour, but in the north, and especially in Scotland, the equally handsome Golden Ball is most popular. Turnips should have the main root partly left on them, but these should be small and devoid of other rootlets.

LEEK

These should have their stems blanched pure white for a length of from 10 to 12 inches, the stems being all even in size and length, and free from discoloration. They should not have swollen, bulb-like bases. When cleansed and trimmed ready for exhibition, each plant should be wrapped singly in tissue-paper for protection from injury.

CELERY

This is a popular exhibition vegetable, and usually appears at all the late summer and autumn shows. In collections, Celery is usually employed to equalise Leeks, both "dishes" standing erect, one on either side of a pile of Cauliflowers, as a background. Six Celery plants usually make a dish. The plants should be fully blanched—whether white or red varieties—have very firm, solid, clean stems, and the leaves should remain uncut. The bases of the plants, however, from which the roots are produced, should be neatly trimmed. Celery should not be lifted from the ground more than one day previous to being wanted for exhibition. When well washed and trimmed, and the best selected and dried with a soft cloth, they should be wrapped in clean paper and carried to the show and staged. It is a great defect in Celery if the stems are hollow or pithy and the centres have bolted to flower prematurely.

SEAKALE

This vegetable seldom enters into competitive collections, as it is not in season during the summer and autumn. Whenever presented, however, the heads should be very stout in stem, blanched white, and of about 7 inches in length, the points of the stems just showing very small white leaves. Seakale is best shown in bundles of from 9 to 12 heads, standing erect in a shallow punnet, and held together with a band of blue paper round the bottom, and securely tied.

ARTICHOKE

Both Jerusalem and Chinese Artichokes should be clean specimens, even in size, of the best form, and preferably quite white. A dish of Jerusalem Artichokes may include 12 specimens and Chinese 36 specimens.

CELERIAC AND KOHL-RABI

Neither of these vegetables are attractive exhibition roots, but if shown they should be clean, neatly trimmed, even in size, and as fresh as possible.

THE VALUE OF TAKING PAINS

Whilst all vegetables intended for exhibition should be the best specimens obtainable, it frequently happens that success in competition is partly due to effective arrangement, or grouping. To that end a carpet of fresh green parsley greatly contributes. Each kind of vegetable should be placed, according to its size, in the background, centre, or front, so as to create a good perspective. The greatest care should be exercised in the preparing, packing, carting, and final staging, in order to avoid bruising or otherwise disfiguring the competing products.

CHAPTER VII

CALENDAR OF OPERATIONS

JANUARY

MAKE a sowing of Ailsa Craig or other first-class Onion in shallow pans or boxes, under glass and in gentle heat. Prepare a hotbed of stable manure and leaves, and on this place a frame, half filling it with good soil, for sowing seeds of Early Gem Carrot. Arrange sets of early Potatoes in shallow boxes, and expose them to full light to get them ready for forcing in frames or pots. Introduce Seakale and Chicory into warmth in a very dark place, and cover them with soil to produce blanched heads. See that Celery in the open ground is well banked up in the ridges, and have straw-thatched hurdles ready to cover them should hard frosts occur. Be fully prepared to protect Turnips, Parsnips, or July-sown Carrots.

FEBRUARY

Old breadths of Jerusalem and Chinese Artichokes should be lifted and stored, some selected tubers being replanted in fresh soil. Eschallots may also be planted. Additional Potato tubers for planting should be set up in boxes to sprout in very gentle warmth. Make a sowing of Early Gem or Early Nantes Carrot seed out-of-doors on a warm

border. More Seakale and Chicory roots may be put into warmth to produce blanched heads. Large Onion bulbs for producing seed may be planted on a sheltered border. Horseradish may also be planted on fresh soil. Poor ground should be well manured and deeply dug ready for Potatoes, Onions, or similar crops. Sowings of Celery and Leeks may be made in pans or boxes under glass, to secure very early plants for showing at summer exhibitions.

MARCH

Cropping becomes general this month. In the first fortnight Mid-season Carrots, such as Favourite or Model, and in the last fortnight, New Intermediate, should be sown. Also the maincrop or spring-sown Onions. Make a sowing of Crimson Globe Beet in a sheltered place, and as early in the month as possible, the main sowing of Parsnip seed. Sow Extra Early Milan or Jersey Navet Turnip seed in drills on a warm border. More Celery and a little Celeriac seed may yet be sown under glass, and a further sowing of Leeks. First and second early Potatoes may be planted on a warm border. Make weekly sowings of Early Round or Globe-rooted Radish seed. More Seakale roots may be planted in warmth for forcing. Sow Asparagus seeds; rake the loose material from the surface of established beds of Asparagus.

APRIL

So far as is practicable, all seed Potatoes should be planted this month, and, where sowings of Onion, Carrot, Parsnip, and Globe Beet have not been made, seeds should be sown at once. A sowing of Celery seed to raise plants

for late use may be made in the open ground. Plants from the earlier indoor sowings should be pricked out thinly in frames or under hand-lights. Examine the Eschallot beds, and press down the bulbs where they have been loosened or dislodged by frost. Make sowings in shallow drills of Salsify and Scorzonera seed, also successions of White Snowball Turnip and Radish seed. Keep the soil well stirred between the rows of seedling plants. Root-cuttings of Seakale should be planted out early to raise a stock of plants for forcing in winter. Transplant strong Onion plants from the frame into the open ground on rich, deeply worked soil, and also some from the autumn outdoor sowing.

MAY

Early in this month the sowing of seed for the main crop of Long Rooted Beet should be made. Any belated Potatoes should be planted at once. Early planted tubers now well through the soil should have soil drawn up to the plants, and be given a shelter of dry litter at night to protect them from late frosts. Early sown Carrots, Beets, Parsnips, Turnips, and Onions will need thinning, and the hoe should be used freely between the rows. Towards the end of the month, trenches should be prepared for planting out both early Celery and Leeks. Later sown Celery and Celeriac will need dibbling out thinly. Make frequent sowings of Radishes.

JUNE

Celery plants now becoming strong should be put out into trenches. If the weather is dry, draw shallow drills

for Turnip seed, and sow the seeds thinly after giving each drill a heavy soaking with water. Give the young plants liberal dustings with soot to ward off the fly. Well thin out all later root crops, and keep the ground free from weeds. Use the hoe freely between the rows of Seakale. Sow seed of Kohl-Rabi in drills 12 inches apart. Artichokes will need frequent hoeings between the plants during this month.

JULY

Root crops are maturing and need chiefly to be kept clean. Early sown Globe Beets will now be furnishing roots large enough for pulling, as will the early sown Carrots. Directly some early Potatoes are cleared off, a small bed of Carrots of the Nantes or Favourite variety should be sown for pulling young in the winter. Further plantings of Celery and Leeks may be made, and, if the weather is dry, liberal waterings should be given to these, as well as to those previously planted. Some of the earliest Celery plants may now be tied up, then partly earthed up and banded with paper to induce good blanching. Towards the end of the month Eschallots will be ripening, and may be pulled, dried, and stored away. Give a sprinkling of coarse salt or nitrate of soda to Asparagus beds.

AUGUST

Spring-sown Onions should now be ready to lay over on the ground by gently pressing the necks to soften them, then laying all the tops on the ground one way ; this induces the bulbs to swell. Good sowings of Snowball Turnip should be made in the first and third weeks, and also, in the third week, one of Purple or Green Globe. Still more

Celery and late-sown Leeks may be planted out. By the end of the month all Globe Beets should be pulled, then trimmed and stored, or laid in thickly under a hedge, covering them with soil for a time; they can be drawn upon for use as required. Continue the earthing-up of Celery and Leeks, gradually, but well. All early Potatoes and most of the second early varieties should be lifted this month and stored for consumption. Make a sowing of any good variety of Onion to stand the winter. Sprinkle Asparagus beds with coarse salt or nitrate of soda.

SEPTEMBER

All August-sown Turnips will need good flat hoeing and thinning, as then they will bulb freely for a winter supply. Some Carrots and Beets may be lifted as wanted for consumption. All Onions other than those recently sown should be pulled, dried, cleaned, and stored in a dry place. Potatoes may be lifted as required for consumption, but the main crop should be allowed to finish growth before being lifted for storing. Further moulding-up of Celery and Leeks may be done on dry days, with well pulverised soil.

OCTOBER

During dry weather, lift carefully the main-crop Carrots and Beets and store them in a cool place for the winter. Pull some Turnips and lay them in a sheltered place for use during frost. Late Potatoes should be lifted, dried, and stored in a cool place. Cut down the stems of Jerusalem Artichokes. Complete the moulding-up of Celery and Leeks. Some Seakale roots should be lifted, trimmed, allowed to

partly dry, then be planted in soil in gentle warmth and darkness, to produce early blanched heads. Kohl-Rabi should be pulled and stored, and Celeriac roots in rows have soil drawn up to cover them in case of frost.

NOVEMBER

Lift all Seakale roots, trim them and lay them in under tree cover for use during winter, the side trimmings being made into root cuttings and also laid in soil thickly for a time. Lift some Parsnips and lay them in soil where access can be had to them in severe weather. Salsify, Chicory, and similar roots should be got up and stored in sand in a cool shed or cellar. A final moulding-up of late Celery may be given, the sides of the ridges being hard patted down to ensure a sharp, solid slope to throw off rain and exclude air. Commence to dig and trench vacant ground. Apply a mulching of manure to Asparagus beds.

DECEMBER

Beyond following the instructions for November, little more can be done outside. Indoors, Seakale roots may now be forced in greater numbers. Cover Potato pits with litter to protect them from severe frost, and make all roots in the ground or in the store secure from harm in hard weather. Continue the digging and trenching of ground in open weather. Lift Asparagus roots for forcing.

INDEX

Agaricus campestris, 93
Allium ascalonicum, 37
  Cepa, 40
  Porum, 88
  sativum, 38
Ammonia, sulphate of, 16
Animal manures, 13
Apium graveolens, 36, 77
Artichoke, the Chinese, 33
    exhibition, 105
  the Jerusalem, 34
Ashes from burnt wood as manure, 15
Asparagus, 71
  for exhibition, 98
  forcing, 77
  general cultivation, 73
Asparagus officinalis, 71

BASIC slag, 15
Beet-root, 19
  for exhibition, 99
  wintering the roots, 20
Beta vulgaris, 19
Blanched-stem vegetables, 71
Brassica Napus, 65
  oleracea Caulo-rapa, 39
  Rapa, 69

CALENDAR of Operations, 106
Carrot, 23
  fly (*Psila rosæ*), 27
  for exhibition, 99
Celeriac, 36
Celery, 77
  blanching, 80
  preparation of exhibition, 104
  varieties, 82
Chemical manures, 15
Cichorium Intybus, 82
Cochlearia Armoracia, 31

Corn-cobs, green (Indian corn maize), 5
Cow manure, 14
Crambe maritima, 84

DANDELION, 83
Daucus Carota, 23
Digging, the operation of, 8

ESCHALLOT, 37
  exhibition, 102
Exhibition, preparation of vegetables for, 98

FISH guano, 16
Forking the soil, 9

GARLIC, 38
Green manures, 17
Guano, native, 17

Helianthus tuberosus, 34
Hoeing, importance of, 10
Horseradish, 31

INTRODUCTION, 1

KAINIT, 15
Kohl-Rabi, 39

LEEK, 88
  blanching, 81
  for exhibition, 103
  seed-sowing, 89

MANURES, animal, 13
  basic slag, 15
  chemical, 15
  cow, 14
  fish guano, 16

Manures—
green, 17
kainit, 15
native guano, 17
nitrate of soda, 16
phosphatic, 15
pig, 14
poultry and pigeon, 14
sewage, 16
sulphate of ammonia, 16
sulphate of potash, 15
wood ashes, 15
Manuring, need for, 10
Mushroom, 93
for exhibition, 100
indoor culture, 95
outdoor culture, 96
preparation of beds, 94

NATIVE guano, 17
Nitrate of soda, 16

ONION, 40
autumn-sowing, 43
for exhibition, 101
planting out, 51
raising under glass, 48
spring-sowing, 45

PARSNIP, 28
for exhibition, 102
Peucedanum sativum, 28
Phosphatic manures, 15
Pig manure, 14
Potash, sulphate of, 15
Potato, 52
cultivation of, 58
exhibition, 101
propagating the, 54
storing tubers of, 62
summer culture of, 60
varieties of, 61
Poultry and pigeon manure, 14
Psila rosæ, the Carrot fly, 27

RADISH, 63
exhibition, 102
Raphanus sativus, 63
Roots, round bulbs and tubers, 33

SALSIFY, 30
exhibition, 103
Scorzonera hispanica, 30
Seakale, 84
blanching, 87
cuttings, 85
preparation for exhibition, 104
seedlings, 85
Sewage manure, 16
Soda, nitrate of, 16
Soil, forking the, 9
preparation of the, 6
Solanum tuberosum, 52
Stachys tuberifera, 5, 33
Sulphate of ammonia, 16
Sulphate of potash, 15
Swede turnip, 69

TAKING pains, the value of, 105
Taraxacum officinale, 83
"The Vegetable Garden," 40
Tools for use in the vegetable garden, 10
Tragopogon porrifolium, 30
Trenching, bastard and true, 7
Tropæolum tuberosum, 5
Turnip, garden, 65
exhibition, 103
Swede, 69

VEGETABLES, kinds of, 2
preparation of, for exhibition, 98
with tapering roots, 18

Printed by BALLANTYNE, HANSON & Co.
Edinburgh & London